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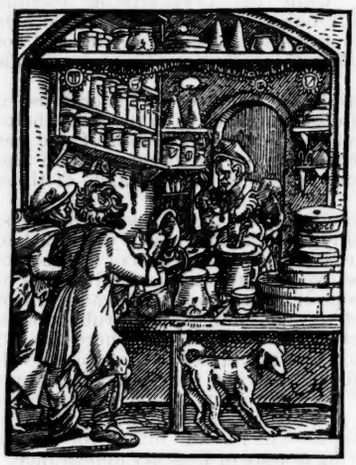
[ORIGINAL COMMUNICATION.]

THE DISPENSATORY OF VALERIUS CORDUS.



From a wood-cut by Jost Ammann, in "*Eygentliche Beschreibung aller Stände auf Erden*," by Hans Sachs. Printed by Sigm. Feyerabend, in Frankfurt a/M. 1568.

IN these days of activity upon the field of pharmaceutical history, it will not be without interest to give a concise account of the origin and progress of the first dispensatory or pharmacopœia published in Germany, by authority of the government.

This work, which corresponds to our present notion of pharmacopœia, was composed by Valerius Cordus, and bore the title "*Pharmacorum* omnium quæ quidem in usu sunt *conficiendorum ratio. Vulgo vocant Dispensatorium* pharmacopolarum *Ex omni genere bonorum authorum, cum ueterum, tum recentium collectum et scholiis utilissimis illustratum, in quibus obiter, plurium simplicium, hactenus non cognitorum, uera noticia traditur. Authore Valerio Cordo* [etc., etc.]. *Norimbergæ apud Joh. Pretrejum.**

There are two editions of this work, issued by the same printer, both without date. The edition having the title here quoted is in quarto; there is also a duodecimo edition, in which the words which are printed above and in the note in Roman, are omitted. The latter is supposed to have been the original edition. From various considerations it is tolerably well settled that both of these editions appeared in 1546.

Valerius Cordus was born February 18th, 1515, at Simtshausen, in Upper Hessen, where his parents (who resided at Erfurt) were at the time on a visit. His father, Euricius Cordus, was appointed professor of medicine at Marburg, in 1527. At this place, both Valerius and his brother Philippus were matriculated as students of medicine, having obtained the baccalaureate degree in 1531. Valerius then went to Wittenberg, where he soon established himself as teacher. In 1543 he made a journey to Italy, for the purpose of study, but never returned, as he died at Rome, on September 25, 1544, aged 29 years.

From the copperplate title-page, by C. N. Schwartz, of the Dispensatory of Valerius Cordus, Nuremberg, 1666.

The accounts given of the Dispensatory by various authorities up to within a year or so from the present time have been very incorrect. Redwood, for instance, states that the first edition was published in 1524, and that subsequent editions appeared in 1535 and 1542. The fact is, Cordus never lived to see the publication of the work.

While he was on his way to Italy, he visited Nuremberg, where he made the acquaintance of prominent scholars and physicians. Here it became known that he had compiled a work, from the best authorities, on old and new remedies, which had already been introduced in manuscript in some cities of Saxony. He was, therefore, asked to furnish a copy for the apothecaries of Nuremburg. Cordus, however, thought that the latter would hardly accept the work as a standard without the sanction of the authorities, and he therefore presented a copy to the Senate of the city for examination and legalization. The Senate accepted it with thanks and handed it over to a committee of physicians, so that if anything should be found that might require alteration, this might be done in consultation with the author. The committee declared the work the most perfect and best of its kind in existence, whereupon the Senate resolved to have it printed, and passed an ordinance that the apothecaries should, in the future, prepare their medicines exclusively after the new standard. Before the book was printed, however, the author died in Italy, and the work was subsequently edited as "a monument in honor of the distinguished and industrious young scholar Valerius Cordus." All these data are taken from the preface to the first edition. It is certain, therefore, that the book was published *after* the author's death, though many previous writers have given the year 1535 as the date of the first issue.

It has been recently ascertained, that Valerius Cordus visited Nuremberg during a journey in 1542.

The number of copies ordered by the Senate to be printed was one hundred, of which each pharmacy was to receive one, while the others were ordered to be kept at the office of the Senate. And at a subsequent session the sum of one-hundred gold-gulden and the payment of his tavern expenses was ordered to be paid to him. This was in October, 1543, but no mention is made of the dispensatory in the documents of 1544 or 1545. It came up for discussion again on June 28, 1546, and the work was immediately taken in hand, so that it was issued from the press on Sept. 7, 1546. Under this date there appears, also, in the official record, the last mention of the Dispensatory, in the following ordinance: [The quaint mediæval style of German in which this and similar documents are written, can, of course, not be reproduced in the translation.]

"Whereas the apothecaries' code, heretofore prepared by Dr. Cordus, has been printed in accordance with the order recorded on folio 208, it is resolved, that a copy be furnished to each physician and to each apothecary, with the order to follow it in all cases. And, whereas, the "Albrecht" apothecary* has first made a

* *Translation.*—"Manner of preparing all medicines, so far as they are in use. Commonly called "The Dispensatory of Apothecaries." Collected from every class of good authors, both ancient and modern, and illustrated with most useful commentaries, in which here and there true information on several hitherto unknown simples is furnished. By Valerius Cordus." The rest of the title is: "Item de collectione, repositione et duratione simplicium. *De adulterationibus quorundam simplicium. Simplici aliquo absolute scripto, quid sit accipiendum* 'Αντιβαλλόμενα, *id est, Succedanea, sive Quid pro Quo. Qualem virum pharmacopolam esse conveniat. Cum Indice copioso.*" [Likewise on the collection, keeping, and duration of simples. On the adulteration of certain simples. At the conclusion of any one simple [will be found stated] what should be taken as substitutes—that is, which for which [*quid pro quo*]. What kind of person the apothecary should be. With a copious index."

* That is, the incumbent of the establishment then known as the "Albrecht Apotheke."

copy of it, he is to receive a honorarium of ten gulden. (Signed) Herr Hyronimus Baumgärtner.

The Dispensatory appears to have attracted much attention immediately after its appearance. It was often reprinted, both at Nuremberg and elsewhere. There is a Paris edition of 1548, three of Lyons (1552, 1559, 1599), two of Venice (1556, 1563), etc., etc. [One of us possesses the editions of Nuremberg, 1592; and that of 1612, to which is appended a folio pamphlet containing Laws and Regulations for physicians and apothecaries enacted by the Senate on May 27th, 1612. This same copy, like many others existing elsewhere, has a large number of leaves of writing paper bound in at the end of the text, on which are entered, in manuscript, a great number of formulæ introduced in the course of time.]

Like all scientific works of the middle age, the Dispensatory of Cordus is written in Latin. The titles of compound medicines are chosen either from one or another of the constituents, or according to its properties, or according to the original author, or according to the (supposed or true) effect.

For instance, a plaster which contained among its constituents the *juice*, or rather mucilage, of fenugreek seed, linseed, and marshmallow root, was called "Emplastrum diachylon," meaning "plaster with juice" (διά, Greek preposition, "through;" in later language also "with;" χυλῶν, gen. plur. from χυλός, juice). Another plaster containing vinegar and saffron was named "Emplastrum oxycroceum," meaning "acid saffronated plaster." In the course of time, many of these preparations suffered alterations in composition, and it often happened that the very substances which originally gave rise to the name were omitted. Our present Emplastrum diachylon, for instance, no longer contains any juice or mucilage. And so in the case of many others. Some of the names have, in the course of time, become veritable etymological riddles, which have occasionally been solved through philological acumen. Some of them are still obscure. One of the most enigmatical, to etymologists, has been the word *opodeldoc*. Mr. Hermann Peters, of Nuremburg (see literary notice at the end of this article) suggests the following

Interior of a pharmacy in the time of Valerius Cordus. From a wood-cut in "*Reformation der Apotheken*," by Otto Brunfels. Printed by Wendel Riel in Strasburg, 1666.

solution of the riddle. He thinks that the word is derived from constituents of the *old* opodeldoc plaster (quoted for instance in the last Nuremberg edition of Valerius Cordus of 1666). This formula, namely, does not contain a single one of the constituents of modern opodeldoc, but the principal components are: Opoponax, Bedellium (= Bdellium), and "Aristoloch" root. If we take the first syllable of the first word (*opo*), the middle syllable of the second (*del*), and the last syllable (*loch*) of the third, we have *opodel-loch;* and this is the form in which Paracelsus writes the word. Later it was altered to opodeltoch and opodeldoc.

Simples are mentioned by Cordus only in those cases when they require a special preparation to be suitable for use. The principal contents of the work are formulæ taken from the Greek, Roman, and Arabic physicians, chiefly from Dioscorides (of Anazarba in Cilicia), Galenus (of Pergamus), Rhazes (of Bagdad), Avicenna (or Ibn Sinâ), Mesua (the younger), and Nicolaus Præpositus (of Salerno).

The formulæ generally contain only vegetable or animal constituents (still there are quite a number, particularly among plasters, which contain minerals). All these mixtures belong to that class of preparations which have received the name galenical, after the celebrated Roman physician Claudius Galenus who attributed much value to compound or complicated preparations. So for instance, the formula for Confectio Damocratis, which has 55 constituents in the Dispensatory of Cordus.

Note.—The preceding notices are based partly upon Flückiger, "*Pharmacognosie des Pflanzenreiches*," 2d ed., pp. 993 sqq., but mostly upon the recent work of Mr. Hermann Peters (of Nuremberg): "*Aus Pharmaceutischer Vorzeit. In Wort und Bild.*" 8vo, Berlin, 1886, which gives a most interesting account, based on extended researches in old archives, etc., of the history of pharmacy in olden times, and is an artistic treasure, such as is rare among pharmaceutical literature.—Ed. American Druggist.

[Original Communication.]

A NEW TEST FOR COCAINE.

BY HENRY MACLAGAN.

The permanganate test of Dr. Giesel will hardly ever be accepted as a practical one, that is to say, one for every-day use, the facility with which that salt is reduced by such an infinite variety of substances being a serious objection to it. There is not much doubt, however, that the amorphous alkaloid is instantly destroyed by potassium permanganate, while the crystallizable cocaine forms a salt which remains intact for a considerable period; in fact, the amorphous portion can be almost if not quite entirely removed by this means and the pure crystals obtained.

It is scarcely possible to produce for general use a cocaine salt which is *absolutely* free from the amorphous, and the least trace of this, even a fraction of one per cent, would cause reduction of the permanganate and possible condemnation, especially in the hands of those not fully posted.

The writer has been using a test for the past six months, discovered accidentally, which has never yet failed to give satisfactory results. If about one grain of hydrochlorate of cocaine be dissolved in about two fluid ounces of water, one or two drops of water of ammonia added, and the sides or bottom of the containing vessel rubbed with a glass rod, well marked striæ will appear where the rod has touched, and shortly after, flocks of precipitate will form and slowly subside, leaving the liquid clear and bright as at first. If the amorphous salt is present, even in moderately small proportions, no striæ nor precipitate will form, and the liquor will remain milky for a long time, the surface having a more or less oily appearance.

If the amorphous alkaloid is present in considerable quantity, which is nearly always the case when the salt is made from the mixed alkaloids just as obtained from the leaves, it may be partially separated by dissolving about thirty grains in two ounces of water, and adding slowly, drop by drop, a five-per-cent solution of ammonia, stirring constantly, until a flocculent precipitate begins to appear. The alkaloid will be found in sticky masses on the glass and rod. It may be obtained in a very pure state by repeated fractional precipitation, stopping each one at the point where the liquor begins to lose its milkiness, and loose white flocks appear. The alkaloid obtained in this way, after being deprived of coloring matter if necessary, is a clear, transparent substance of a slightly yellowish color, resembling Canada balsam, but of firmer consistence, and may be lightly touched with the fingers without sticking, at ordinary temperatures. A specimen over six months old fails to show the least sign of crystallization. The hydrochlorate of this alkaloid has the appearance of a varnish-like mass, and cannot be reduced to powder. According to the experience of the writer, the average proportion of this alkaloid in coca leaves is about fifteen per cent of the total alkaloidal yield.

Laboratory of McKesson & Robbins,
New York, January 17th, 1887.

[Original Translation.]

THE ACTIVE PRINCIPLES OF DIGITALIS AND THEIR THERAPEUTIC SUBSTITUTES.

In a recently published work by Prof. P. C. Plugge, of Groningen, on the most important remedial agents, which has been translated by Prof. Eduard Schaer, of Zürich (see note),* the subject of the active principles of digitalis has received a critical and perspicuous treatment. We are sure of rendering a service to many of our readers by an abstract of this portion.

Besides the usual constituents of plants, there have been found in digitalis the following principles:

Inosit (Marmé), antirrhinic acid (Morin), digitalic acid (Morin), digitaleinic acid (Kosmann), and a very poisonous, nitrogenized substance, the real active principle which Homolle (1845) named digitalin.†

In the course of time, however, it was ascertained that this digitalin was not a simple substance, but a mixture of various substances, which have not always been designated with the same names by different authors.

The article prepared by Homolle and Quévenne, which was known in the market as "French digitalin," consisted, as was acknowledged by these authors themselves, of a mixture of three different substances, namely:

"*Digitalin*" (insoluble in ether-alcohol), "*Digitaline*" and "*Digitalose*" (both soluble in ether-alcohol).

The "German digitalin" was at first designated by Walz as "digitalosin," but afterwards he used the name "digitalin." And this was reported by Walz to be a compound of the following constituents:

Digitalin (which when treated with acid is split into glu-

* Die wichtigsten Heilmittel in ihrer wechselnden chemischen Zusammensetzung und pharmakodynamischen Wirkung, übersichtlig dargestellt von Dr. P. C. Plugge, Prof. an der Reichsuniversität in Groningen.—Mit Bewilligung des Verfassers übersetzt von Eduard Schaer, Prof. der Pharmacie am Eidg. Polytechnicum zu Zürich. 8vo. Jena, 1886 (Received from Prof. Schaer).

† In accordance with prevailing English and American custom, we write the names of all alkaloids with the termination *ine;* and the names of all glucosides or other indifferent principles with *in*. In the case of the principles of digitalis, we have, at present, no occasion to use the termination *ine*, as none of the principles so far obtained from it is a true alkaloid.

cose and paradigitalein and later into digitaliresin). *Digitaletin. Digitaloin* (or digitaloinic acid). *A-* and *β-digitalacrin. Digitalis*-fat.

Nativelle prepared from digitalis leaves a very active body, which he reported to contain *Digitaleïn, Digitalin,* and *Digitin.*

These substances received still other names from Wiggers, as will be seen by the following comparison:

Digitaleïn of Nativelle is the digitalin ("digitalinum activum") of Wiggers, a very active, crystalline substance.

Digitalin of Nativelle is the digitaleïn ("digitalinum in crystallis") of Wiggers, likewise an active substance, but amorphous.

Digitin of Nativelle is the "digitalinum passivum" of Wiggers, and is sometimes also called "substance cristallisée inerte."

In view of the great confusion produced by this large number of differently used names, which could be largely swelled by an addition of the names of the decomposition products, it became very desirable to subject digitalis to a new investigation, and to finally establish names for such principles as could be recognized as definite individuals. This investigation was conducted by Schmiedeberg, who established the presence of the following well-characterized constituents, all free from nitrogen:

Digitonin ($C_{31}H_{52}O_{17}$), a substance not possessing the characteristic effect of digitalis, but in properties and effect greatly resembling saponin. Digitonin is a glucoside, which is split by boiling with dilute acids into sugar and two amorphous substances, *digitoresin* and *digitoneïn.* Digitonin is almost insoluble in absolute alcohol.

Digitalin ($nC_6H_8O_3$), a glucoside, very difficultly soluble in water and very hard to crystallize. This substance, treated in alcoholic solution with hydrochloric acid, is split into glucose and *digitaliresin.*

Digitalein differs from the preceding glucoside chiefly by its ready solubility in water and its amorphous condition. It is easily soluble in absolute alcohol. In effect it agrees with digitalin, and yields, when treated as there stated, likewise *digitaliresin.*

Digitoxin ($C_{21}H_{33}O_7$). This easily crystallizable substance, which is *not* a glucoside, is almost completely insoluble in water, but, nevertheless, the most powerfully active constituent of digitalis. On boiling its alcoholic solution with dilute acid, *toxiresin* is produced.

The three last named of these substances have the physiological effects characteristic of digitalis, with only small qualitative differences between them. The last-named substance, however, viz., *digitoxin,* is very different from the others, *quantitatively,* as it is much more powerful.

The decomposition products of these principles are partly active and partly inert. [They are omitted here.]

The above enumerated constituents of digitalis are probably not always present in the leaves in the same proportions, and as they are of very varying solubility in different menstrua, they are no doubt present in very varying quantities in the different pharmaceutical preparations, such as the infusion, extract, tincture, vinegar, etc., of digitalis. The aqueous preparations will naturally contain the bulk of the *digitalein* and portion of the more difficultly soluble *digitalin.* The *digitoxin,* however, which is entirely insoluble in water, will probably be entirely absent in these preparations, but it will most likely be contained in the tincture or alcoholic extract.

In consequence of these circumstances, the various pharmaceutical preparations of digitalis are but little reliable and even dangerous. [Other authors differ in this from Prof. Plugge; they maintain that more uniform results can be obtained from a given preparation of the leaves, if well and uniformly made, than by using any of the isolated constituents.—Ed. Am. Dr.] For this reason, it is desirable to extract from digitalis its pure active principle, to carefully ascertain its maximum doses, and then to employ it in place of the drug itself. This has been attempted some time since, and such a substance has not only been put upon the market, but has even been recognized by several pharmacopœias under the name "digitalinum."

The *commercial digitalin* here mentioned, as well as the *digitalinum* of the pharmacopœias, must not be confounded with the chemically pure *digitalin* (of Schmiedeberg). "Commercial digitalin" is, like "commercial aconitine," a varying mixture of different principles of digitalis and their decomposition products. Consequently, the commercial varieties of digitalin differ in various directions, and are known under various designations. So we have a *digitalinum amorphum* (digitalin incrystallizable), very bitter and easily soluble in water; a *digitalinum crystallizatum,* in form of a white, crystalline powder or white crystals which are almost insoluble in water. We have a *German digitalin* and a *French digitalin.* There is a "soluble" and an "insoluble digitalin." Further, some are known by proper names: Homolle's, Nativelle's, Merck's, Felten's, etc., digitalin. The Austrian pharmacopœia quotes a "digitalinum depuratum, which is obtained by extracting the commercial German digitalin with chloroform.

The question then arises, which of these is the proper kind to use. This is difficult to answer; in fact it is so difficult that the utility of any of these principles of digitalis becomes very problematical, and practitioners will probably revert rather to the original drug and the infusion, than to run the risk of making a choice among the former.

According to Schmiedeberg, the commercial digitalins have the following composition:

Nativelle's crystallized digitalin contains chiefly the very poisonous digitoxin, insoluble in water, mixed with the decomposition product toxiresin and paradigitogenin.

Nativelle's amorphous digitalin consists chiefly of the resinous decomposition products digitaliresin and toxi resin.

Homolle and Quévenne's "digitalin," as well as that of Kosmann, appear to have been chiefly digitonein.

Homolle and Quévenne's "digitaline" is principally the digitalin of Schmiedeberg.

Homolle and Quévenne's "digitalin chloroformique" contains the last-named kind of digitalin, together with considerable quantities of paradigitogenin, and small amounts of digitoneïn and digitaliresin.

The water-soluble "German digitalins" made by Henn & Kittler, of Strassburg, Felten & Co., of Rüsselsheim on-the-Main, and Merck, of Darmstadt, consist of seven to eight different bodies. They contain much digitaleïn, also digitonin, digitoneïn, and two or three per cent of digitalin (Schmiedeberg's).

The above statements (given in abstract) lead to the conclusion that it is necessary to obtain from digitalis a definite active principle, representing the drug, to do away with the uncertainty of therapeutic effect inherent in the above preparatious.

Among the bodies isolated by Schmiedeberg, that which is most easily obtained in a pure state is *digitoxin.* Yet this being completely insoluble in water, and therefore liable to irregular absorption and to sudden energetic action, is too powerful an agent to be safely used. The other two bodies, which do not appear to possess this particular drawback, can be prepared in a pure state only with great difficulty, and are therefore not easily accessible.

The author is of the opinion that digitalis and its preparations should be entirely dropped, and to employ, in place of it, some active principle of corresponding physiological properties, which is at the same time easy to prepare in a pure state. In this opinion he is seconded by Harnack.

The author now gives a list of active principles which possess a physiological action similar to that of digitalis. As some of these substances have already been regularly employed as substitutes for this drug, it will be of interest to give the list:

Nerein (probably identical with digitaleïn) and *oleandrin,* both derived from *Nerium Oleander* L. of the family of Apocynaceæ.

Apocynin and *apocyneïn* from the root of *Apocynum cannabinum.*

Helleboreïn, $C_{26}H_{24}O_{18}$, a principle easily soluble in water, from the root and root-leaves of *Helleborus niger, viridis* and *fœtidus,* nat. fam. Ranunculaceæ. This has cumulative effects, like digitalin.

Euonymin, a crystallizable glucoside of great power. The author states that this is a constituent of the resinoid known as "euonymin" (euonyminum viride), used in the United States as a remedy in dropsy, "and which is also contained in the latest U. S. Pharmacopœia, and is derived from the bark of *Euonymus atropurpureus* Jacq.")*

Antiarin, $C_{14}H_{20}O_5$, the active principle of the East Indian arrow poison Upas Antjar, which is the inspissated juice of *Antiaris toxicaria* Lesch., nat. fam. Artocarpeæ.

Thevetin, $C_{54}H_{48}O_{22}$, from the seeds of *Thevetia neriifolia* Juss., nat. fam. Apocyneæ.

Strophantin, from the seeds of *Strophantus hispidus* D. C., or *Str. Kombe* Ol., nat. fam. Apocyneæ.

Scillain or *scillitoxin,* from the bulbs of *Urginea Scilla* Steinh., nat. fam. Liliaceæ.

Adonidin, a glucoside from the herb and flowers of *Adonis vernalis* L. This has been frequently used of late, and with good effect.

Convallamarin, a glucoside resembling digitaleïn in its effects, from *Convallaria majalis* L., nat. fam. Smilaceæ.

Erythrophlœïne, the only alkaloid belonging to this group, which possesses, besides the true digitalis effect, also the tetanic power of picrotoxin or of digitaliresin. This is derived from sassy-bark, *Erythrophlœum guineense* C. Don., nat. fam. Mimoseæ.

And several others, not yet sufficiently studied.

Tribromide of Allyl is prepared by treating 1 part of allyl iodide with 2½ parts of bromine. It is a colorless liquid, soluble in ether, of a density of 2.436, and boils at 217° C. It has been used successfully in hysteria, asthma, croup, etc. Dose, 2 to 4 drops in 1 to 2 C.c. of ether, hypodermically, or 5 drops in a capsule, 2 to 4 times daily.

* This is a mistake. The U. S. Ph. does not recognize such variable preparations as *euonymin,* meaning a resinoid. The author should have expressed himself thus: "euonymin, used in the U. S. as a remedy for dropsy, which is derived from the bark of Euonymus atropurpureus, which latter drug is recognized by the latest U. S. Pharm." Euonymus *is* recognized, but not euonymin.—Ed. Am. Drugg.

[ORIGINAL TRANSLATION.]

The Chemical Nature of Petroleum Ointment.

FROM an interesting paper, by C. Engler and M. Boehm, in *Dingler's Polytechnisches Journal* (vol. 262, p. 468), we take the following abstract, after stating that the term *vaseline* is applied by the authors (as, indeed, quite commonly on the continent of Europe) to the commercial petroleum ointments irrespective of any special manufacturer's product. The word "vaseline," according to American patent laws, is the property of a single firm, and cannot be used by others. In Europe, however, the term has long escaped the bondage of proprietorship, and is used quite promiscuously.

Regarding the chemical nature of vaseline, only a few investigations are on record. Rud. Wagner* designated it as a mixture of heptane (C_7H_{16}) with paraffins. Moss † regarded it as a mixture of different, easily-fusible paraffins. Miller considered vaseline and "cosmoline" (which latter is a vaseline of higher melting point) as mixtures of paraffin with volatile hydrocarbons. Naylor‡ finally showed that cosmoline contains 98.59 per cent of hydrocarbons, and that fractions of different melting points may be separated from it by fractional cooling of its ethereal solution.

Most of the investigations refer to its physical or external properties (such as solubility, resistance to acids and chemical reagents, admixture of sulphuric acid, sulphonic acids, etc.), and it is just with reference to these properties that much discussion has been had up to the present time, whether the product obtained from petroleum residues (which the authors here designate as "natural vaseline" or simply "vaseline") or a mixture of heavy paraffin oils with ceresin (which the authors designate "artificial vaseline") is preferable.§

It has long been known‖ that vaseline may be obtained, not only from the residue of American (Pennsylvania) petroleum—from which it was first prepared—but also from those of the Galician and Alsatian petroleum. And Mendelejeff and Briel ¶ have shown that a vaseline similar to the American may also be prepared from Caucasian petroleum.

According to Gerstenberger,** the natural vaselines show slight differences in melting points and specific gravity, which are dependent upon their source and mode of preparation. In their principal properties, however, they do not differ materially. On the other hand, considerable differences have been shown to exist between natural and artificial vaselines, which should be kept in view when using the two substances practically. (Compare at end of this paper.)

The investigations of the authors refer almost exclusively to the *natural vaseline.*

This excellent base for ointments may be obtained from petroleum residues either by decolorizing with charcoal, or by "bleaching" the residues with concentrated sulphuric acid, sometimes with the addition of bichromate, and subsequent treatment with charcoal, or, finally, by distilling the bleached or unbleached residues.

Since the authors desired to examine vaseline in its natural condition, they purified it, for their purposes, merely by bone black. The treatment with sulphuric acid causes the elimination of certain groups of hydrocarbons (of the composition C_nH_{2n}; also some aromatic ones). And even distillation produces changes which materially affect the composition of the product.

Preparation of Vaseline.—The authors used for this purpose two varieties of petroleum furnished by Dr. Fedorowicz, of Ropa, in Galicia. Both of these were strongly dichroic, green by reflected, yellowish to brownish-red by transparent light, and showed the following behavior on distillation, the several figures given indicating the fractions, by volume or weight, respectively obtained at the stated temperatures:

	Spec. Gr.		Bel. 150°.	150°-290°.	290°-340°.	O'er 340°.
I.	0.812.	% vol.	30.2	35.9	5.3	27.7
		% w't.	26.7	35.5	6.5	31.1
II.	0.820.	% vol.	21.8	51.7	8.8	17.0
		% w't.	20.0	51.2	9.4	18.9

From these oils the vaseline was prepared in two different ways:

1. By dissolving the residues in petroleum-ether, bleaching the solution with bone-black, and evaporating the solvent.

2. By bleaching the petroleum itself, and distilling until a product of the proper consistence remained.

First Method (From Residues).—As the residues, deprived of all fractions boiling below 340°, had still the consistence of syrup, another portion, about one-third, was distilled off, until the residue had the consistence of butter. One part of this was then dissolved in 7 parts of petroleum-ether of spec. gr. 0.66, and treated with 1½ parts of powdered bone-black for 1 or 2 hours. It required 17 successive operations to render the magnificently fluorescent solution as colorless as water. After distilling off the solvent with steam, the vaseline remained behind as an odorless, tasteless, and colorless oil of strong blue fluorescence, which congealed after awhile to a white, very translucent salve-like mass.* This was found to consist purely of hydrocarbons. Its melting point was 32° C. (ab. 90° F.). During cooling it exhibited not a trace of crystalline structure, nor were any signs of crystallization traceable in the precipitates obtained by cooling its hot alcoholic solution. This is contrary to Naylor's observations. But the portion previously separated from it by distillation (to render it denser), when treated in the same manner, separated numerous scales of paraffin.

Second Method (From Petroleum).—In order to avoid the laborious repeated boiling of the petroleum with bone-black, and subsequent filtering, the oil was bleached by passing it through a series of filters, arranged after the plan of sugar house filters. Each of these was about 30 inches high, 2 inches wide, surrounded with a steam jacket, and contained 1¾ to 2 lbs. of bone-black. The oil became colorless usually after passing 6 of these filters, but it still possessed then a deep-blue fluorescence. Its spec. grav. had at the same time been greatly diminished.

I. from 0.812 to 0.795.

II. from 0.820 to 0.782.

In order to obtain the vaseline from these bleached oils, they were subjected to distillation *in vacuo* (at 10 to 15 *mm* pressure) up to a temperature of 250° C. The flask was immersed up to the neck in an air-bath heated to the required temperature. The yield and character of the products were as follows:

	Yield.	Sp. Gr.	Melt. Point.
I.	13.8	0.8809	30°–31°
II.	13.2	0.8785	30°–31°

In determining the melting point, it is preferable to use Wimmel's method,† since these substances pass from a strongly translucent into a perfectly transparent condition long before they have attained the melting point proper.

The authors then give the results of analytical determinations of the components of these products. Prepared by either method, they were found to consist purely of hydrocarbons. Even the bleached oil itself was free from oxygen or sulphur, and the oils removed by distillation are richer in hydrogen and poorer in carbon than the corresponding residues.

The authors next turned their attention to the nature of the substance abstracted by the bone-black. For this purpose portions of each of the crude oils were distilled in vacuo in the same manner as the bleached oils. The residues thus obtained, and not further purified, were found to be free from nitrogen, but contained unweighable traces of sulphur, and the following percentages of oxygen (determined by difference):

I.: 0.46%. II.: 1.29%.

Hence, the proximate results of the treatment with bone-black consists in the removal of the oxygenated compounds. Besides, the charcoal retains also certain constituents containing less hydrogen, so that the product has been rendered richer in *saturated* hydrocarbons.

Effects of Distillation.—In order to ascertain how much the melting point of vaseline may be raised by distilling off a portion, and also to determine whether its chemical nature is altered during this process, portions of each of the two crude oils were distilled, *in vacuo*, in fractions, until only a few drops of residue remained behind. It was thereby shown that the melting point of the *distillates* gradually rose with the temperature, while, on the other hand, the *melting point of the residue* rose only (from 30.5° to 32°–33° C.) by taking off the first fraction; subsequently, however, it *sank in a continuous ratio.* This proves that by distilling vaseline in vacuo its melting point can be raised, at most, only by 2 or 3 degrees, while on further distillation it sinks again, probably in consequence of slight decomposition.

In these experiments, it was particularly remarkable that every one of the *distillates* had a strongly *crystalline* structure, while the residues, down to the last portion, possessed the amorphous condition peculiar to vaseline.

Since the whole appearance of the distillates showed that they consisted of a mixture of solid paraffin with volatile oils, attempts were made to separate these portions. It being impossible to accomplish this by filtration or expression, the authors employed a method depending upon the fact that from an ethereal solution of the mixture alcohol precipitates the paraffin more readily than the oils. The process is as follows (and may be used on the small scale): The mixture of paraffin and oil is dissolved in the least possible quantity of cold ether, and the resulting solution is mixed, under strong agitation, with absolute alcohol, until it is completely filled with flakes of

* *Dingler's Pol. Journ.* (1877), vol. 223, 515.

† *Jahresb. f. reine Chem.*, 1876, 1171. Compare *Proc. Am. Pharm. Assoc.*, 24, 271.

‡ *Moniteur Scientifique*, 1880, 10, 579.

§ This is a preparation of the last Germ. Pharm., entitled: *Unguentum Paraffini*, with the synonyms "vaselinum; vaseline." It is prepared by mixing 1 part of solid paraffin and 4 parts of liquid paraffin.

‖ *Chem. Centralbl.*, 1882, 319.

¶ *Jahresb. f. reine Chem.*, 1882, 1,458; 1,466.

** *Chemiker Zeit.*, 1885, 1,398.

* It is probably in this or some similar manner that the most beautiful of all petroleum ointments, the so-called Caucasine (obtainable through McKesson & Robbins, of New York), is prepared.

† *Zeitsch. f. anal. Chem.*, 1868, 267.

paraffin. It is now strained, and the alcohol still adhering to the flakes evaporated on the water-bath. The strained or filtered liquid is then further mixed with absolute alcohol, the separated paraffin again removed, and this process repeated until no more flocculi of solid paraffin, but only oil-globules are precipitated. From the final filtrate, the ether and alcohol are removed by distillation, the residue dissolved in the least quantity of ether, and the solution (placed in a freezing mixture) treated with very little cold absolute alcohol, which causes a further separation of paraffin. This is likewise repeated until only oil separates. In order to obtain accurate results, it is advisable to subject the paraffin first separated to a renewed treatment by dissolving it in ether and reprecipitating with alcohol. The authors tested this method by employing it upon a mixture prepared by melting together 30 parts of liquid paraffin and 10 parts of solid paraffin (melting at 56° C.). The first separation yielded 16.1, and the second 9.3 parts of solid paraffin (within 7 per cent of the total). This shows that the method is available for an approximate determination of solid paraffin, while it has the advantage that it can produce no alteration in the constituents. Whether it is equally well applicable to mixtures of soft paraffins and very viscid oils remains to be seen.

While all the fractions obtained from vaseline by distillation yielded, by this method, distinctly crystalline flakes of paraffin, *undistilled vaseline,* when treated in the same manner, showed no crystalline structure whatever in the separated portions.

Separation of Vaseline into a Solid and Liquid Portion.—The method just described was next employed by the authors to separate the solid portion of vaseline from the liquid. In order to reduce the number of operations, a little more alcohol was added to the first prepared ethereal solution, so as to produce a thin magma. The resulting filtrate was deprived of ether and alcohol, and the process was repeated only if it was not entirely liquid. The last precipitations were also made in a freezing mixture, and the first obtained precipitates redissolved and reprecipitated as stated above.

Working in this manner, the authors obtained from 100 parts of vaseline (derived from oil II., having a melting point of 30.31° C.), 40.8 parts of solid matter, which they designate as "solid vaseline" (to distinguish it from "solid paraffin"). This had at spec. gr. 0.8836 at 20° C., and the melting point 40° C. The rest constitutes the "liquid vaseline," had a spec. gr. 0.8809, and began to congeal only at 10° C. The curious fact that the original vaseline has a lower spec. gr. (0.8785) than either of its constituents thus separated by solvent is not without precedent, since Grotowsky * has shown that certain technical paraffin oils (mixtures of paraffin and oil) are lighter than their constituents.

Swiss Condensed Milk.

THE chief seat of this now important industry is the little village of Cham, situated on the Lorze, a few miles from the lake of Zug. The chief factory there, which is the principal, all belonging to a wealthy company, concentrates daily about 60,000 litres of milk, the produce of more than 8,000 cows, and sends out from 15 to 17 millions of tins of preserved milk annually.

The company collects the milk from the farmers of the neighborhood, and pay 12 centimes per litre for it. On reaching the factory, the milk is poured through a silk filter into a large reservoir. In the reservoir it is automatically weighed and then drawn off into large copper boilers, and is heated to about 35° C. by steam. To the milk one-eighth of its weight of cane sugar is added, and when this is dissolved another automatic action carries it into vacuum pans in which it is concentrated by boiling at a temperature of 52° C. Under these conditions the constituent elements of the milk (fat, caseine, etc.) are unaffected. The milk is reduced to one-third of its volume after three hours in the vacuum boilers, and at that time it is of the consistence of a thick syrup. It is passed into great cylinders, which are kept constantly plunging into running water, and by this means it is rapidly cooled. It is then conveyed to the upper floors and poured into the metal boxes ready for it, which are immediately soldered down and packed for delivery. The vessels in which it is carried are washed, brushed, and steamed before being re-employed.

The whole of the work is accomplished by machinery, from the cutting up of the plates of tin to the soldering of the cans. So perfect are the tools that one skilled workman can solder 4,000 tins in his day of ten hours.—*Revue Scient.* and *Chem. and Drugg.*

An Idiosyncrasy regarding Tannic Acid is reported in the *Practitioner*, the patient suffering attacks of difficult breathing whenever it was taken as a remedy. The theory advanced by the reporter was that in anæmic subjects the conversion of tannic into gallic acid was in some way retarded.

* *Zeitsch. f. Berg-, Hütten- und Salinenwesen* (1876), 24, 42.

APPARATUS FOR THE CONTINUOUS DETERMINATION OF SPECIFIC GRAVITY.

UPON one arm of a balance, a receiving globe, *A* is so fastened that a current of gas, or of liquid, made to enter the globe through the central tube *B B*, finds its exit by the discharge pipe *C C*.

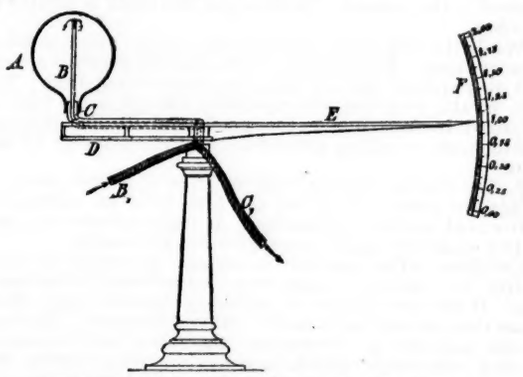
The other arm of the balance is pointed, and serves as an index against a scale expressing specific gravities. When the current of air or liquid fills the globe, the pointed arm of the balance will rise or fall according to the specific gravity of the contents, and if the density should vary at any time while the current passes, this would be indicated by a different position of the index.

The apparatus has been patented by Friedrich Lux, of Ludwigshafen (Germ. Pat. 35,430).

[The principal objection to this apparatus appears be be the difficulty of making the central bearing independent of any influence which the attached tubes exert, which, unless perfectly neutralized, would render the apparatus practically useless.—EDITOR AMER. DRUGGIST.]

Oil of Wintergreen.

IT is stated that the production of oil of wintergreen has materially decreased lately, and that the prospects are that it will be still further curtailed. The receipts at New York this year have been small and somewhat irregular, resulting in a gradual advance to very firm prices. It has not been a paying article for some time past, owing to the low prices ruling at the distributing points, and the producers have consequently been making less profit than usual. But there have been other causes for the small supply this year, such as the destruction of the birch brush in Central and Western Pennsylvania, where most of the oil comes from. It is well known that very little true wintergreen oil is made, oil of birch taking its place almost entirely. The wintergreen tracts have been so thoroughly worked that the plant has not had an opportunity to renew itself. The same fate,



Lux's apparatus for the determination of specific gravity.

it is said, now threatens the supply of birch, forest fires having destroyed large tracts.—*Chem. and Drugg.*

[NOTE BY ED. AM. DRUGG.—It is likely that the supply of natural oil of wintergreen or oil of birch will soon cease to be of any commercial importance, since the artificial oil, deprived of the useless hydrocarbon, has been introduced. This product, the pure gaultherol, is of such a quality and uniformity that it will, undoubtedly, replace the natural product. Besides, it can be sold at prices which make the distillation of the natural oil entirely unprofitable.]

New Method of Determining Uric Acid.

THIS method is based on the almost absolute insolubility of silver urate in ammonia. The urine (after removal of albumin, if present) is mixed with sodium bicarbonate, which is found to prevent reduction of silver, then with ammonia and ammonio-nitrate of silver. The gelatinous precipitate is best collected and washed on an asbestos pressure-filter. After thorough washing, it is dissolved in nitric acid and the silver determined by Volhard's sulphocyanide methods: 1 C.c. of centinormal sulphocyanide corresponds to 0.00168 gramme of uric acid. Test analysis showed errors of deficiency of only 1 or 2 milligrammes. The author ascribes the irregularity in the composition of silver urate, found by Salkowski, partly to the simultaneous precipitation of ammonium magnesium phosphate, and partly to the fact that Salkowski overlooked the reduction of the silver, the amount of which varies with time and temperature.—*Zeitsch. Anal. Chem.*, 25, 165 and *J. Chem. Soc.*

Rust-Stains on Nickel-Plating may be removed by thoroughly greasing, and, after several days, rubbing with a cloth moistened with water of ammonia. Any visible spots may then be moistened with dilute hydrochloric acid and immediately rubbed dry. Washing and the use of polishing-powder complete the process.

[ORIGINAL TRANSLATION.]

THE RELATIVE MERITS OF THE PRINCIPAL URINARY TESTS.*

(Continued from page 18.)

II. REACTIONS FOR ALBUMIN.

General Rules.—It is always necessary to assure one's self that the urine, which is to be examined, is free from substances *which themselves contain albumin*, such as menstrual blood, fæces, sputa, etc.

Before the urine is examined, it should be filtered, if necessary, by passing it through one or more filters until it is perfectly clear. Since much depends, in certain cases (contracted kidneys, etc.), upon the discovery of very small quantities of albumin, this precaution should never be omitted. For this reason, it is advisable to compare each portion, after the reaction, with a sample of the filtered but unchanged urine, so as to be able to discover even the faintest kind of opalescence. This is done in the best manner by holding both samples, side by side, partly against the light and against the dark coat sleeve of either arm.

Review of the several Albumin Tests.†

1. *The Nitric Acid Test.* (*Heller's Test.*)

Introduce pure nitric acid into a test-tube or cognac-glass, and place upon it, by means of a pipette, a layer of the urine, taking care that it does not mix with the acid, but remains floating on the surface. If albumin is present, a ring-shaped cloud or turbidity will form at the point of contact.

Criticism.—The test is *not quite certain*, since urates may produce the same reaction. To distinguish the albumin from the latter, the urine is gently warmed, when the urates will dissolve. Other means of distinguishing the two reactions are held by Dr. Penzoldt to be not quite free from objections. Another possible cause of the reaction may be the fact that balsam of copaiba had been administered to the patient. In this case, the cloud is soluble in alcohol.

While the test is not quite certain, on the other hand it is *very sharp*. Even traces of albumin still produce a ring, but it requires more or less time for its formation. The test is also very easy of execution, though some care is required in introducing the urine, and also in applying gentle heat, or adding alcohol to test the character of the ring.

2. *The Test by Boiling, with addition of Nitric Acid.*

Mix the urine with about one-fifth (⅕) of its volume of nitric acid, and heat to boiling. If a precipitate or a turbidity makes its appearance, albumin is present.

Criticism.—The reaction is certain, provided the turbidity, etc., makes its appearance immediately after heating. If the precipitate or turbidity appears only after some time, it may be caused by other substances. The test is also quite *sharp*. Sometimes the nitric acid causes a darker coloration which interfers somewhat with the clearness of the reaction. Yet nitric acid is preferable to acetic acid, because an excess of the latter is capable of redissolving the albumin. Finally, the test is sufficiently easy of execution, though the necessity of using heat generally compels the physician to perform the test at home instead of at the house of the patient.

3. *The Test with Acetic Acid and Sulphate of Sodium* (*Panum's Test*).

Add to the urine a few drops of acetic acid, then an equal volume of concentrated [saturated] solution of sulphate of sodium (Glauber's salt), and boil. If albumin is present, a precipitate or cloudiness will be produced.

Criticism.—This test is among the most *certain*, though it is exceeded by others in *sharpness*. It often fails to show traces of albumin. The reason of it is probably the unavoidable dilution of the urine through the addition of the test-liquid. Regarding ease of execution, it has no advantages over others.

4. *The Test with Acetic Acid and Chloride of Sodium* (*Heynsius' Test*).

First add to the urine some acetic acid, then a saturated and filtered solution of chloride of sodium, and boil.

Criticism.—This reaction is regarded by Dr. Penzoldt as *certain*, if the turbidity occurs immediately after boiling. A later occurrence of the turbidity is often noticeable, even with normal urine. Regarding *sharpness*, it is far ahead of other tests, especially that last mentioned. It is, however, not any easier of execution than others.

5. *The Test with Acetic Acid and Ferrocyanide of Potassium.*

Acidulate the urine strongly with acetic acid, then add, without warming, a few drops of solution of ferrocyanide of potassium. In presence of small quantities of albumin, the turbidity occurs only after some time.

Criticism.—This is one of the most *certain* tests, as peptones are not precipitated by it. In *sharpness* it is probably not inferior to any. It is also very easy of performance, although it is rather inconvenient for the physician to carry about with him the liquid reagent.

6. *The Test with Citric Acid and Ferrocyanide of Potassium or Sodium.*

Pavy recommends tablets of citric acid and of ferrocyanide of sodium, which are merely to be powdered, the urine being then poured on.

Criticism.—This test has been designed evidently for the purpose of rendering the preceding one (No. 5) more easy of application at the bed-side. The results which Dr. Penzoldt obtained by trying these reagents, either separately or when previously fused together, were unfavorable, either a cloudiness or an opalescence making its appearance even in normal urine. He, therefore, does not recommend it, for the present at least.

7. *The Test with Hydrochloric Acid and Chloride of Sodium.*

Roberts recommends a saturated solution of chloride of sodium in diluted hydrochloric acid (5 of acid to 100 of water). A layer of this is to be put into a test-tube, and a layer of urine to be poured on, when there will be formed a ring-shaped cloud as in Heller's test (No. 1).

Criticism.—Regarding certainty and sharpness, this test appears to be equivalent to Nos. 3 and 4. Otherwise, however, it does not seem to offer any special advantages.

8. *The Test with Metaphosphoric Acid.*

According to Hindenlang, a small piece of glacial phosphoric acid (in sticks) is dissolved in a little water. The piece need only remain in the water a few minutes to produce a solution of sufficient strength. This solution is then added to the urine. In practice, it is stated to be preferable to add the piece of the acid directly to the urine. A cloudiness of precipitate will occur immediately.

Criticism.—According to the author of the test, metaphosphoric acid also precipitates peptones, but is said not to yield precipitates in normal urine. In many repeated trials with normal urine, both Dr. Penzoldt and Dr. Vetlesen have always observed either opalescence or (in most cases) a recognizable or even decided turbidity, no matter how the test was performed, though the employment of the solid acid usually produced more turbidity. Since other experimenters have likewise noticed this turbidity to be produced in most cases, even when other reactions proved the absence of albumin, peptones, or mucin, the test is to be regarded as not sufficiently *certain* to be of general use in practice.

9. *The Test with Carbolic Acid.*

Méhu recommends the following method: Mix urine with 2 to 3% of its volume of nitric acid, and then add 10% of a solution consisting of 1 part of crystallized carbolic acid, 1 part acetic acid, and 2 parts of 90% alcohol. Shake well and set aside.

Criticism.—The certainty of this test does not appear to Dr. Penzoldt to be free from doubt. On repeatedly testing normal urine, he observed a cloudiness after adding the carbolic solution (which may possibly have arisen from globules of carbolic acid that became separated), which was almost, though never entirely, cleared up on boiling. As the test has no special practical advantages, it will not be missed if it is dispensed with.

10. *The Test with Picric Acid* (*Trinitrophenol*).

This test, which has long been known, and has recently been again recommended by G. Johnson, is performed either by adding a few drops of a saturated solution of picric acid, or simply a few crystals of the latter ("about the size of a pea to every 5 C.c. of urine") to the urine to be tested. A cloudiness making its appearance within a few minutes is caused by the presence of albumin. If the cloudiness occurs later, no conclusion can be based upon it.

Criticism.—According to Dr. Penzoldt, the test is *certain*, as he could never obtain it with normal urine. It is also one of the most searching in existence. Besides, it is very simple, particularly if crystals of picric acid are used. Nevertheless, he thinks that if only traces of albumin are present some care is needed in executing the test. It occurred sometimes that, if too little of the picric acid was taken, traces of albumin were not recognizable. On the other hand, when too much of the acid is added, the undissolved portion of the crystals renders observation difficult, and in such cases an opalescence was noticed even in normal urine. To eliminate this uncertainty, only perfectly pure crystals of picric acid should be used. Dr. Penzoldt adds that, "owing to its explosive character, only small quantities should be carried about him by the physician."

[There is a mistake here. Picric acid is not explosive, and even when very strongly heated, it only deflagrates. But in combination with certain other substances, or in form of picrates, it is a very powerful explosive, requiring, however, heat or concussion.—ED. AM. DR.]

11. *The Test with Tannic Acid.*

Almén recommends a 2% solution of tannic acid in weak alcohol, which is to be added to urine in the proportion of 1 volume of the former to 5 of the latter. Normal urine is said to remain "usually" unchanged. In very concentrated urine, urates are precipitated, but these are stated to be again dissolved on heating.

Criticism.—Every normal urine tested by Dr. Penzoldt in this manner was rendered very turbid. This turbidity

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* Abstract from the pamphlet of Dr. F. Penzoldt, "Aeltere und neuere Harnproben und ihr praktischer Werth." 8vo, Jena, 1886.

† Compare with this chapter the results obtained by the Clinical Society of London which were published by us, in abstract, on page 175 of our last volume.

cleared up somewhat on boiling, but always remained quite distinct. Consequently, the test is to be regarded as *uncertain*.

12. *The Test with Trichloracetic Acid. Raabe's Test.*

Add to the urine one or more crystals of trichloracetic acid. This will dissolve at the bottom, and at the place of contact of the two liquids there will be formed a distinct, sharply defined turbid zone.

Criticism.—According to Raabe, normal urine does not produce a reaction, though an excess of urates may cause turbidity. Dr. Penzoldt used Kahlbaum's trichloracetic acid. This produced in entirely normal urine a very faint, though distinctly recognizable mist-like turbidity, which did not disappear by heat. Even when the acid was previously dissolved and filtered, an opalescence was obtained. (This has since then been confirmed by others.) It will therefore be necessary to use this test with great caution.

13. *The Test with Potassio-Mercuric Iodide (Geissler's Albumin Test Paper).*

This test, which was known already before Geissler, has been recommended by the latter in the form in which it is used in England [by Dr. Oliver; see our last volume, page 175]. Sheets of thick filtering paper are treated with concentrated citric acid solution, and dried. Other sheets are similarly charged with a 3% solution of corrosive sublimate mixed with 12 to 15% of iodide of potassium. A piece of the acid test-paper is first put into the urine to be tested, and subsequently a piece of the other paper; the whole is then shaken. After a short time, a turbidity or precipitate will be produced.

Criticism.—On testing numerous specimens of normal urine, not the faintest trace of turbidity was ever observed by Dr. Penzoldt. (Dr. Vetlesen found that in about one-half the number of cases a slight turbidity made its appearance after standing for some time.) If the mixture is sharply observed, it is easy to recognize the paper fibres floating about in the liquid, which latter is perfectly clear. Such fine paper fibres are not an unusual occurrence even in filtered urine, being then derived from the filter. Hemi-albuminose and peptones are also precipitated by this test, but this is no great disadvantage. On the other hand, a precipitate of urates may be produced in concentrated urine free from albumin. For this reason, the test is *not absolutely certain*. Mistakes may, however, be avoided by diluting the urine if it contains too much uric acid, or better still, by warming it subsequently. The former remedy may be always safely employed without having to risk a failure in recognizing the presence of albumin, as the test is *very sharp*. The second remedy (warming) would render one of the great advantages of the method illusory, namely, its convenience. When very much albumin is present, the test does not, of course, afford an estimate of the quantity. Dr. Penzoldt has even noticed cases, when the reaction was more distinct in urine that contained little albumin than in such which contained larger quantities.

14. *The Test with Sodio-Mercuric Chloride (Stütz's Albumin Test-Capsules).*

Open one of Stütz's gelatin capsules (to be obtained from the Hofapotheke [R. Stütz] in Jena, Germany), at both ends, with a knife, and drop it into the urine to be examined. The contained reagents, viz., sodio-mercuric chloride, chloride of sodium, and citric acid,* are thereby dissolved out, and produce a cloudiness or precipitate if albumin is present, according to Fürbringer.

Criticism.—Fürbringer himself has already stated that that the test is *not* absolutely *certain*, since even normal urine exhibits an opalescence when treated with it. This is confirmed by Dr. Penzoldt. Besides, the evolution of very fine gas-bubbles, which disappear only after some time, and may cause confusion, renders the observation somewhat difficult. But, as the test appears to be *very sharp*, and is besides very convenient, it may be used, like the preceding, as a preliminary test at the bedside. In doubtful cases, other tests must be relied upon.

15. *The Test with Formic Acid and Chloride of Gold.*

Acidulate the urine with a few drops of concentrated formic acid, then add a few drops of a solution of chloride of gold (1 in 1,000), and warm. A rose-red to purplish-red or even blue coloration indicates albumin (Axenfeld).

Criticism.—It should be stated that this test has not been intended by Axenfeld for the urine. Dr. Penzoldt expected that it might be of advantage as a color-reaction in such cases where the urine cannot be filtered clear. He has, however, become convinced that it does not possess the requisite certainty and sharpness.

Summary.

The most certain and sharp tests are:

1. Acetic Acid and Ferro-cyanide of Potassium (No. 5).
2. Boiling and Addition of Nitric Acid (No. 2).

Both of these are specially to be recommended for regular use at the bedside.

The next in certainty are the following:

3. Solution of Picric Acid (No. 10).
4. Acids in combination with saline solutions (Nos. 3, 4, 7).

In a general way, it may be stated that all the tests, particularly those most convenient for application, provided they are sufficiently *sharp*, may be relied upon when they yield negative results, as the absence of albumin is thereby reasonably well proven. If a positive reaction, however, is obtained, corroborative evidence will usually become necessary by resorting to the decisive tests enumerated at the beginning of this summary.

STOPPER-GUARD.

THE adjoining illustration shows a stopper-guard of English origin, consisting of a band of metal with return ends, which is slipped on the neck of the ordinary shop round; then another piece of metal, into which the guard proper is fixed, is pressed down over the return ends, thus fixing the apparatus securely upon the bottle. The sliding guard moves easily in the upright, and is not liable to catch. The figure shows the stopper secured. In this position, it is impossible to remove it without notice, so that the laudanum bottle, fitted as shown, is not at all likely to be taken up and used when tr. rhei is wanted. The good points about this novelty are that no special bottle is required, and that to the customer it appears rather as an embellishment than a danger signal. The guard is made of lacquered brass, in several sizes.—*Chemist and Druggist.*

Stopper-guard.

Pilocarpine Salts.

E. HARDY and G. CALMEL have analyzed the following compounds of pilocarpine: the nitrate, $C_{11}H_{16}N_2O_2,HNO_3$, which forms rhombic lamellæ, very soluble in water, but less soluble in alcohol; the platinochloride $(C_{11}H_{16}N_2O_2)_2$, H_2PtCl_6, which forms somewhat soluble quadratic prisms and lamellæ; the modified platinochloride $(C_{11}H_{16}N_2O_2)_2$, $PtCl_4$, a very soluble, crystalline, yellow powder; the aurochloride, $C_{11}H_{16}N_2O_2AuCl_3$, formed in slender needles when the pilocarpine is in excess; the aurochloride $C_{11}H_{16}N_2O_22AuCl_3$, obtained in microscopic needles when the auric chloride is in excess. Both these compounds form viscous oils when heated in presence of water, and combine with only one equivalent of hydrogen chloride. The acid aurochloride, $C_{11}H_{16}N_2O_2HAuCl_4$, obtained in needles by adding a limited quantity of auric chloride to a solution containing free hydrochloric acid; the acid diaurochloride, $C_{11}H_{16}N_2O_2,2HAuCl_4$, obtained in needles or right rectangular prisms by adding excess of auric chloride in presence of hydrochloric acid; the mercurochlorides, which crystallize in slender needles and are very soluble in acids; and the hydrochloride, which forms a gummy mass. Pilocarpine itself is a viscous substance, very soluble in alcohol and water, slightly soluble in cold ether or chloroform mixed with alcohol. Pilocarpine does not act on carbonates, but with alkaline hydroxides it forms compounds which are decomposed by carbonic acid.—*Comptes Rend.*, 102, 1,116.

Sozolic Acid (formerly called Aseptol).

THIS antiseptic is more strictly named orthoxyphenyl-sulphurous acid. In composition it is parallel to salicylic acid, containing, however, the group sulphuryl (SO_2) in place of carbonyl (CO) of salicylic acid. It is a reddish syrupy liquid, of sp. gr. 1.40, with a feeble and not disagreeable odor. It dissolves in water in all proportions, congeals at 8°, and distils at 130°. With ferric chloride it gives the same violet coloration as salicylic acid. Though a decided acid, it had not the corrosive action of phenol. It is said to arrest absolutely every fermentation, diastatic or fungoid, to a much greater degree than phenol and other well-known antiseptics. It has been recommended for photographic purposes, especially for mounting pastes. The advantages of sozolic acid lie chiefly in its great solubility and freedom from odor—qualities which, together with the absence of corrosive action, should make it suitable for toilet preparations such as mouth washes.—*Chem. and Drugg.*

* That is, a certain amount of mercuric chloride is intimately mixed with an excess of chloride of sodium, and this finally with the citric acid.

New Test of the Purity of Sulphate of Quinine.

DR. DE VRIJ proposes a new method for testing the purity of sulphate of quinine, namely, by means of neutral chromate of potassium. We translate his paper on the subject from the *Bulletin Commercial*, of November, 1886:

In order to test the purity of any quinine salt, dissolve 1 Gm. in 100 Gm. of water. Heat the liquid to boiling, and add to it 0.24 Gm. of very pure chromate of potassium,* dissolved in a little water. While adding this solution, a slight cloudiness will be noticed, which will, however, immediately disappear upon stirring with a glass rod, provided the liquid is still at a boil. It is then entirely transparent and of a yellow color. After cooling for at least twelve hours, nearly all the quinine will have separated as a well crystallized neutral chromate. Now collect these crystals upon a filter, wash them with distilled water, and dry them in the air. They contain no water of crystallization and correspond to the formula $2(C_{20}H_{24}N_2O_2)H_2CrO_4 = 766.5$. They are very little soluble in water at the ordinary temperature. At 12° C. (53.6° F.), 1 part of the salt is soluble in 2,733 parts of water, and at 16° C. (60.8° F.) in 2,000 parts. A great error will, therefore, not be committed if it be assumed that every 100 Gm. of the mother liquid remaining after crystallization will contain 0.05 Gm. of the salt, provided the temperature of the united mother liquid and washings is within 12° and 16° C. Hence by adding the calculated correction to the weight of the crystals, the true amount of quinine contained in the salt under examination will be found on calculation.

If caustic soda is added to the mother liquid left after the crystallization of the chromate, and the liquid is then evaporated on a water-bath nearly to one-half, so that a little more than 50 Gm. remain in the capsule, the liquid will be entirely transparent, and will deposit no sediment on cooling, if the quinine salt was chemically pure.

If, however, the quinine salt was not pure, the case is different, because when a quinine salt is converted into chromate, the quinine separates as a pure chromate, while the cinchonidine or any other cinchona alkaloids, if present, remain dissolved in the mother liquid. In order to estimate the alkaloids besides the quinine, it is necessary to use a larger quantity of the sample, so as to obtain at least 5 Gm. of the chromate of quinine by the process above described after collecting the separated crystals upon a filter, and washing them with water; if a little caustic soda is added to the united mother liquid and washings, two cases may present themselves, which may be stated concisely as follows:

1. If the quinine salt contained less than five per cent of cinchonidine, the liquid will remain clear.
2. If more than five per cent of cinchonidine is present, the liquid will become turbid already at the ordinary temperature.

On now evaporating the liquid on the water-bath to ⅔ of its original volume, the whole of the cinchonidine will separate, in both cases, in a crystalline form, and may be collected upon a filter when the liquid has become cold, after which it may be estimated. Generally it is cinchonidine which separates in this manner; but it is only rarely pure and contains traces of quinine or of cinchonine.

The chromate of quinine obtained in these assays is not lost, but may be employed in the preparation of *pure quinine*. For this purpose it need only be treated with water containing an excess of caustic soda (that is, somewhat more of the latter than is theoretically required to decompose the salt), care being taken that this is done at a temperature below 30° C. (86° F.), for at this temperature really pure quinine begins to cake together and at 40° C. (104° F.) it becomes plastic.

Neutral chromate of potassium may also be used to advantage for separating the quinine which is always contained in the commercial cinchonidine. For this purpose, one part of the latter is dissolved in 100 parts of water with the aid of sufficient hydrochloric acid. Having then rendered the liquid slightly alkaline to test-paper, two or three drops of a concentrated solution of neutral chromate of potassium are added and the mixture set aside for forty-eight hours. If no separation of crystals of chromate of quinine has then taken place, two or three further drops of the chromate solution are added, and this is repeated, if necessary, until no more chromate of quinine separates. The excess of chromate of potassium used in this operation must be very small, because it is necessary to avoid, as much as possible, the formation of chromate of cinchonidine, which is not stable like the quinine salt, but is rapidly decomposed. Hence, if a great excess of chromate of potassium is added to the solution of cinchonidine, the chromate of quinine which separates does not possess a bright-yellow, but a reddish color.

As the chromate of quinine is much less soluble than the tartrate and even the oxalate of quinine, the loss of quinine which is encountered while preparing the tartrate for the optical examination may be rectified by using chromate of potassium for its precipitation.

L. Rouguès, in the same journal, adds the following remarks:

"We have tried DeVrij's new method of examining the purity of commercial sulphate of quinine, and have found it to answer the purpose very well. We have been able by means of it to estimate, approximately, the quantity of quinine and cinchonidine contained in commercial sulphate of quinine. It is, moreover, much more practical than Oudemans' optical process, which is apt to yield erroneous results in the hands of an inexperienced person. We are engaged in trying the process for estimating the quinine contained in cinchona bark, and we hope shortly to be able to report a practical method of assay based upon it."

*Pure, neutral chromate of potassium has an alkaline reaction upon red litmus paper, but not upon turmeric or phenol-phthalein.

The Production of Gum Senegal.

THE "Senegal" gum of commerce is found in the territory of the tribes inhabiting several oases between the Senegal and the Atlantic Ocean; the largest forest gum trees are those of Sabel-el-Tatack and El-Hiebar; the former produce the white gum, which is most valued; the other, the gray and red varieties. The acacia trees which grow in the desert are inferior to and have a more crooked appearance than those growing near the river, where the soil is more favorable for vegetation. The acacia of the desert rarely attains a height of more than thirty feet, and it has the shrivelled appearance which is peculiar to vegetation in these regions which are exposed to strong winds. In Western Africa there are only two seasons, the rainy and the dry one. The nearer to the equator, the longer the duration of the rainy season. In Senegambia it lasts two months, and is preceded and followed by a month of tempest. In November, the bark of the gum-tree cracks in numerous places and the gum exudes. About this time the hot winds begin to blow and the burnt trees lose their leaves, assuming the appearance they have with us during the winter. The gum dries quickly, outwardly it looks dull, but on breaking it is brilliant and shiny; it becomes very transparent if put into the mouth for an instant. About a month is required to make the tree produce its full crop. The natives then prepare for the gathering in, and the whole tribe, men, women and children, some on foot, others on horse-back, proceed to the forests. A camp is established for the duration of the crop, and all set to work. The gum collected is placed in sacks of tanned bullock hide, which are fastened by twos to the backs of camels and bullocks. The work is done slowly, there being no fear of rain; when finished, the whole tribe return, and proceed towards the banks of the Senegal, which are at a great distance from St. Louis. The merchants come to Galam, a small station situate about one-thousand kilometres from St. Louis on the Senegal, and there wait for the tribes and their crop of gum, which is generally paid for in printed calico, which the collectors resell in the interior.—*Chem. and Drug.*

Rapid Filtration.

OTTO N. WITT announces that he has for some years made use of a very simple but effective contrivance for rapidly filtering liquids where it is of importance to save the suspended matters. It is easily intelligible without a cut.

Into a glass-funnel of perfect shape is placed a disc, made of glass or porcelain or some suitable metal (platinum, pure nickel, etc.), of a diameter of one and one-half inches, and about three-sixteenths inch diameter. These discs are ground at the edge to an angle of sixty degrees, so as to adapt themselves snugly to the shape of the funnel, and are perforated with numerous fine holes. They serve as sieves, and at the same time as supports for the filtering paper. Two thicknesses of this should be laid upon the discs in the funnel, the paper being turned up at the sides, and after having been moistened, made to lie flat against the glass. The lower sheet of paper should be only as large as the disc itself, otherwise it will not be possible to cause the other filter to accommodate itself to the sides without ugly folds. The funnel with disc is then set into a flask or other receptacle, and this is connected with the filter-pump, whereupon filtration will proceed very much more rapidly than when conical filters are used. If the liquid to be filtered is alcoholic or ethereal, the water with which the filters had been first moistened, must be displaced by washing it with alcohol, or with alcohol and afterwards ether.

The glass disc or sieves are made by Const. Heintz, of Stützerbach, the porcelain-sieves by Haldenwanger's porcelain factory in Charlottenburg. They may be ordered through dealers in chemical apparatus.

Medicines in Capsules.—When any form of alcohol is taken in connection with gelatin capsules, the latter are not soluble. Tannin also renders gelatin insoluble. When the stomach is inflamed and irritable—as following excessive use of alcoholic drinks—chloral, morphia, and other medicines should not be administered in this form.—*Southern Practitioner.*

Cerate of Subacetate of Lead remains white, non-irritating, and free from rancid odor, when incorporated with 2% to 3% of boric acid.

Drumine: a New Anæsthetic.

UNDER the name *drumine*, Dr. John Reid has described an alkaloidal compound, which he says he has separated from an Australian Euphorbiaceous plant (*Euphorbia Drummondii* Boiss.), and has found to possess anæsthetic properties resembling closely those of cocaine. This plant is reported in South Australia to be fatal to sheep and cattle feeding upon it, death following in from twenty-four hours to seven days, marked by paralysis of the extremities, the action being most energetic when the greatest quantity of juice is present in the plant. The compound was obtained by exhausting the plant with alcohol, distilling off the spirit, adding ammonia in excess, filtering, dissolving the residue in dilute hydrochloric acid, filtering the solution through animal charcoal, and concentrating, when the hydrochlorate was deposited in concentrically marked discs with radiating fissures. It was almost insoluble in ether, and freely soluble in chloroform and in water. A 4% solution, applied to the tongue, nostril, and hand, is described as having produced very marked anæsthesia in each case, the sense of taste, even to quinine, having been abolished on the side of the tongue to which it was applied. Injected subcutaneously in a case of chronic sciatica and in cases of severe sprains, it is said to have given immediate relief.

Drumine is, in Dr. Reid's opinion, "almost a pure sensory paralyzer without preliminary excitement," and can be given with comparatively slight, if any, risk.—*Pharm. Journ.*

[Dr. Reid uses the hydrochlorate of drumine, which is very soluble in water. In his original paper, in the *Australian Medical Gazette*, October, 1886, he confounds the alkaloid with the hydrochlorate. At all events, there is some ambiguity in his statements regarding the solubility of the alkaloid and the salt. From analogy, we should suppose that the alkaloid was soluble and the salt insoluble in chloroform.—ED. AM. DR.]

Decomposition of Hypodermic Solutions.

IT IS known that considerable local irritation sometimes follows the introduction of a medicine hypodermically, and this result has been attributed to the influences of micro-organisms contained in the solution used. The conditions under which this influence is exerted have been the subject of an investigation by Dr. Engelmann, whose attention was directed specially to solutions of ergotin. He reports (*Med. Wochenschr.*, No. 39) that by cultivation on gelatin plates he has demonstrated the constant occurrence of microbes in solutions of ergotin of various origin, but that the organisms differed widely in their number and nature. On the whole, he is nevertheless of opinion that ergotin is not particularly favorable to their development, since, after a time, the organisms seem to perish, either through exhaustion of nutriment or other causes. Moreover, the ergotin does not appear to undergo any alteration. Speculating as to the origin of the organisms, he was led to suspect that they might be derived from the water used in dispensing, and upon testing several samples of distilled water obtained from high-class pharmacies, he was astonished at the number of organisms present in them. This state of things Dr. Engelmann considers is attributable to the fact that the vessels used for storing distilled water are not thoroughly cleansed sufficiently often, and thus become a breeding place for microbes. The influence of certain antiseptics, such as carbolic and salicylic acids, glycerin, and mercuric chloride, in preventing the development of organisms in such solutions was tried, but it was found that when used in any admissible proportions they only exercise a limited influence. Dr. Engelmann therefore prefers the use, where practicable, of solutions freshly prepared with previously sterilized distilled water.—*Pharm. Journ.*

Preparation of Salol.—At the last meeting of the British Pharmaceutical Conference, it was stated that information could not be obtained as to the method of preparing salol, the phenyl ether of salicylic acid that had recently been introduced as an antiseptic. This information has since been supplied by Dr. C. Kalbe (*Pharm. Zeit.*, No. 72, p. 544), who says it is prepared by heating together equivalent quantities of sodium salicylate and sodium carbonate in the presence of phosphorus pentachloride, the end products being sodium chloride, phosphoric anhydride, and *salol*. In a subsequent communication (*Archiv*, Nov., p. 928), Dr. Eckenroth announced that phosgene gas (carbonic oxychloride) could be substituted for the more expensive phosphorus pentachloride. He also described a crystalline monobrom-derivative of salol.—*Pharm. Journ.*

Iodide of Sodium is said by the writer of a leading article in the *British Medical Journal* to have the following advantages over the potassium salt. It can be used for almost all the purposes for which the latter is employed therapeutically with equally good results. It is more easily assimilated. It is not followed by the same undesirable effects often produced by potassium iodide.

CONDENSER FOR VOLATILE SOLVENTS WHICH ARE INSOLUBLE IN WATER.

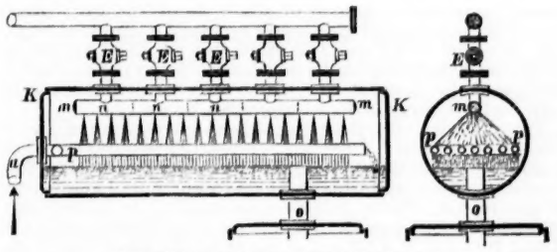
AN apparatus for condensing vapors of benzin and similar solvents has been patented by L. & C. Steinmüller, of Gummersbach, Germany.

It consists of a vessel or box *k*, through which pass a series of thin-walled tubes *p*, *p*, into which the vapors of the volatile solvent enter at *a*. By means of a series of jets, regulated by the valves *e*, a sufficient quantity of cold water is constantly sprayed upon the tubes which causes the condensation of the vapors, so that the condensed liquid will run out at the other end, upon the surface of the water in the vessel. By means of an overflow *o*, the surplus water and the condensed solvent are constantly removed to a reservoir. Any vapor which should escape condensation within the tubes is condensed when it comes in contact with the sprays of water.

Mode of collecting Asafœtida in Afghanistan.

J. E. T. AITCHISON, Brigade Surgeon of the Bengal Army, gives the following account of the collection of asafœtida:

The method of collecting the drug, as far as I could learn, was as follows: A few men, employed for the purpose by some capitalist at Herat, are sent to these asafœtida-bearing plains during June. These take with them provisions consisting of flour, and several donkey-loads of watermelons, the latter in lieu of water, which is not only scarce there, but usually saline. The men begin their work by laying bare the root-stalk to a depth of a couple of inches of those plants only which have not as yet reached their flower-bearing stage. They then cut off a slice from the top of the root-stock, from which at once a quantity of milky juice exudes, which my informant told me was not collected then. They next proceeded to cover over the root by means of a domed structure of from six to eight inches in height, called a Khora, formed of twigs and covered with clay, leaving an opening towards the north, thus protecting the exposed root from the rays of the sun. The drug collectors return in about five or six weeks' time, and



Steinmüller's condenser for volatile solvents.

it was at this stage that the process of collecting came under my personal observation. A thick gummy, not milky, reddish substance now appeared in more or less irregular lumps upon the exposed surface of the root, which looked to me exactly like the ordinary asafœtida of commerce, as employed in medicine. This was scraped off with a piece of iron hoop, or removed along with a slice of the root, and at once placed in a leather bag, the tanned skin of a kid or goat. My guide informed me that occasionally the plant was operated upon in this manner more than once in the season. The asafœtida was then conveyed to Herat, where it usually underwent the process of adulteration with a red clay, táwah, and where it was sold to certain export traders, called Kakri-log, who convey it to India. On August 17th, when I crossed the great asafœtida plains where this drug is chiefly collected, except for the small domes over each root, there was not a leaf or a stem or anything left to point to the fact that any such plant had ever existed there, the heat and winds of July and August having removed every trace.—*Pharm. Journ.*

Note on the Assay of Aromatic Spirit of Ammonia.—MR. EDWARD D. GRAVILL has recently proposed a method of assaying aromatic spirit of ammonia by estimating the amount of carbonic acid gas given off when a measured volume of the spirit was treated with an acid. And he further proposed to use for this purpose the well-known Allen's nitrometer, which acts on the same principle as Lunge's (see our last volume, p. 71). It appears to us, however, that it is comparatively unimportant whether the preparation in question contains a little more or less of the *carbonate* of ammonium, provided the total amount of ammonia, either free or as carbonate, is in accordance with the officinal requirements. Of course, it is well enough to ascertain the quantity of the carbonate; but in addition to it, the liquid should be supersaturated with volumetric sulphuric acid, gentle heat being applied to expel all carbonic acid gas, and the excess of sulphuric acid titrated back with standard solution of soda, phenolphthalein being used as indicator.

Ammonio-Nitrate of Silver an Explosive Body.

MR. H. N. DRAPER draws attention to a peculiar risk attending the preparation of ammonio-nitrate of silver which is probably not generally known, though at least one recent text-book warns the student against the evaporation of the liquid "as there is a risk of producing an explosive body." Only one chemist, viz., Prof. Prescott, appears to have, so far, ventured on an opinion as to the nature of the precipitate formed on the addition of ammonia to nitrate of silver. He looks upon it as $(NH_2Ag)_2O$, but acknowledges it as merely hypothetical.

Mr. Napier (*Pharm. Journ.*, Dec. 18th) relates his experience as follows:

I cannot think that it will be uninteresting if I shortly state the circumstances under which, some years ago, my attention was directed to this subject. There is a very excellent and frequently-used method of glass silvering particularly applicable to the production of telescopic specula, which, shortly described, consists in the reduction by milk sugar of an ammonical solution of silver nitrate, to which potassium hydrate has been added.

I have abundant reason to know *that with ordinary precaution* this process can be carried out with perfect safety; but that no departure should be made from the prescribed conditions, and that especially the silver solution should not be left about unheeded, was sufficiently demonstrated by the circumstances which I now detail.

To a solution of 3.3 grammes silver nitrate enough ammonia was added to redissolve the precipitate at first formed, and then 5 grammes of pure caustic potash. The precipitate produced by the potash was (nearly) dissolved by a further addition of ammonia. The entire volume of the liquid was 50 C.c. It was inadvertently left in an uncovered beaker during nine days, and on being then examined, its surface was found to be covered with a broken-up, lustrous, graphitic film. The internal walls of the beaker were coated with a closely adherent continuous deposit which might have been taken for metallic silver, were it not that its color more nearly resembled that of the lead sulphide which is reduced by sulpho-carbamide (sulphourea). I poured from the beaker into the laboratory sink a perfectly clear liquid, but observing near the bottom a nearly black pulverulent deposit, I, in a weak moment, turned upon this a stream of water from the tap. Here my observations, as regards any practical usefulness, came for the time to an end, for there was a violent explosion which so completely shattered the beaker as not to leave a fragment of it in my hands, which were somewhat severely cut, and I was made deaf for several hours.

It was pretty clear from the outset that, under conditions not quite expected, I had inadvertently produced the compound of silver with ammonia known as Bertholet's fulminating silver, and which has also been viewed as a nitride of the metal. These conditions seemed to be sufficiently interesting for examination, and with the double object of doing this and of arriving at the principle upon which the silvering process was based, I began a series of experiments.

The author then discusses the question of the constitution of the compound, and after quoting the results of his analyses and experiments, he believes it to be probable that, when the solution contains silver oxide and ammonia in the proportion of Ag_2O to NH_4OH, and it is exposed to the air, it loses 2 mol. of ammonia, and the remainder Ag_2O+2NH_4 is extremely prone to split up into Bertholet's fulminating silver ($2AgNH_3$) and water ($3H_2O$).

Japanese Oil of Peppermint, according B. B. Niederstadt, has the specific gravity 0.960 to 0.961, and deviates the ray of polarized light strongly to the left (−105° to −106°, in a Soleil-Ventzke polariscope). It is indifferent towards iodine, soluble in one to two parts of alcohol of sp. gr. 0.850, and does not distinctly give the bluish-violet color with nitric acid which is characteristic of English oil of peppermint.—*Rep. Anal. Chem.*, 1886, 575.

Ferrated Cod-Liver Oil, free from the usual, bitter, acrid taste, may be prepared by saponifying the oil, decomposing with ferric chloride, and dissolving the precipitate in another portion of the oil.

Asiminine, an alkaline recently discovered and named by Prof. J. U. Lloyd, exists in the seeds of the Ohio pan-pan (*Asimina triloba*). It is white, odorless, tasteless; practically insoluble in water; freely soluble in alcohol and ether, and less so in chloroform and benzol. When precipitated from its solvents by evaporation, its condition is amorphous. Its soluble salts are bitter and are precipitated by the usual alkaloidal reagents. The hydrochlorate is less soluble than salts prepared with other customary acids, but is preferable on account of its easier production. The hydrochlorate is white, odorless, sweetish and hhen bitter in flavor, and crystallizes from alcohol in cransparent, square plates, or in interlocked sections of tubes. Its therapeutic usefulness appears to be as a typnotic.—*Drugs of N. Amer.*

On the Physiological Effects of Saccharin.

WHEN Fahlberg's "saccharin" first became known, and its possible use as a sweetening agent was suggested, nothing definite was known regarding its physiological effects. At present, the result of the investigations of various experimenters are on record. Two Italian physiologists, Drs. Arducco and Mosso, found that frogs could be kept for many days in a neutral aqueous solution of saccharin without showing the least sign of discomfort. To dogs the saccharin was administered in quantities gradually rising to 75 grains daily during several days, without bad effects. The bodily weight remained the same, and the saccharin was eliminated unchanged by the urine. The latter was found to be normal in specific gravity and quantity; also in amount of urea and sulphates. The decomposition of the urine was retarded by the presence of the saccharin. Similar results were obtained by Dr. Stutzer, of Bonn, who experimented upon man. As much as 75 grains (5 Gm.) could be borne daily, without any abnormal effects or interference with the appetite.

The elimination of saccharin is accomplished through the kidneys, none of it being discoverable in the saliva, the milk, or the fæces. The sweetening power of 5 Gm. (75 grains) of saccharin is said to be equal to about 1 kilogram (2 lbs. 3 oz.) of sugar. E. Salkowski has recently confirmed Stutzer's statements. Regarding the effect of saccharin in diabetes, Prof. Dreschfeld, of Owens College, Manchester, states that it produces no alteration in the quantity of urine voided or in the amount of sugar excreted. Neither does it materially diminish the faculty of digesting protein bodies or carbohydrates.

According to Stutzer, the addition of small quantities of saccharine to malt increases its diastatic effect in the presence of sugar.—*Dingl. Polyt. Journ.*, 262, 83.

The Administration of Cod-Liver Oil.

PROF. DUJARDIN-BEAUMETZ, in a recent lecture on "Vegetable Diet and Fatty Foods," made the following remarks about cod-liver oil:

Regarding the administration of cod-liver oil, I cannot too much urge the importance of giving cod-liver oil at meal-time, for when mixed with the whole mass of the food, and at the moment of the digestive process, these oils are better supported than when given on an empty stomach. Some have even gone so far as to recommend the incorporation of cod-liver oil with bread, but this combination is far from being palatable, and those who have used it have soon taken a disgust to cod-liver oil and bread.

Habit has a great deal to do with the repugnance which persons have to taking cod-liver oil, and while the people of the North relish it, the inhabitants of Central Europe find it very disagreeable. But it is a fact that children generally imbibe the oil with willingness and, when the habit of taking it is formed, with avidity.

I advise you to discard all those pharmaceutical emulsions which have been devised to mask the taste of cod-liver oil. There are two of these mixtures, nevertheless, which deserve to remain, as they associate with the oil principles which are of use in the treatment of scrofula and tuberculosis. I refer to the preparations of oleum morrhuæ with iodoform and eucalyptol. The first, highly recommended by Fonssagrives, has the following formula: The preparation with eucalyptol is as follows:

Pale Cod-Liver Oil...3 fl. oz.	Pale Cod-Liver Oil..100 parts.
Iodoform .....4 grains.	Eucalyptol.....1 part.
Oil of Anise .....10 min.	M.
M.	

As for the dose of cod-liver oil and the quantity to be administered daily, this is very variable. Jaccoud, who is one of the most strenuous advocates of this remedial agent in the treatment of tuberculosis, has gone as far as 300 grammes (or about 10 oz.) per day. This is very large dosing, and few stomachs can bear anything like this quantity. Generally one is obliged to be satisfied with the moderate dose of a tablespoonful after each meal.

Under the name of bromo-iodized butter, Trousseau proposed the following mixture, which is designed to replace cod-liver oil:

Iodide of Potassium.....	1 grain.
Bromide of Potassium.....	4 grains.
Chloride of Sodium.....	32 grains.
Fresh Butter.....	4 tr. oz.

M.

Sig.: To be spread on bread like butter.—After *Therap. Gaz.*

Salol is recommended as an excellent antiseptic mouth-wash, much preferable to solutions of salicylic acid, as it does not affect the teeth. As it is insoluble in water, it is separated from its alcoholic solution by the latter in form of minute droplets which adhere to the teeth and gums and exert there a protracted antiseptic effect. It should be dissolved in alcohol, and enough of the solution added to water to make the mixture contain three per cent of salol.

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EDITORIAL.

ATTENTION is directed to the new test for the purity of *Cocaine* by Mr. Henry Maclagan of this city, who has had an extended experience with this alkaloid, having had charge of its manufacture on a very large scale. While Dr. Giesel's test, by permanganate of potassium, is acknowledged to be fully reliable, and to indicate the least trace of amorphous alkaloid accompanying the crystallizble cocaine, it is now generally acknowledged that it is too exacting, since it is practically impossible to manufacture an alkaloid of such excessive purity without great waste and without raising its cost to a figure out of all proportion to the practical uses it is put to.

We have already in our preceding volume (page 110) recorded the fact that practitioners of medicine who had been using various kinds of commercial cocaine of good quality, among which were both the amorphous and the crystalline, did not observe any noticeable difference in the therapeutic effects. Indeed, some of them who have had a very extended experience with it, were not even aware, up to the time of the publication of the fact alluded to, that there were two kinds of "cocaine" in the market, or rather, that the commercial cocaines contained more than one alkaloid.

Mr. Maclagan's test has been known to one of us for about six months, and is in our opinion a good and simple test, of sufficient delicacy for every practical purpose. No data are at hand as yet to show what is the smallest percentage of amorphous alkaloid revealed by the test. But this will be soon ascertained; it certainly is quite small.

AN official Standing Committee on the Revision of the German Pharmacopœia is likely to be organized in the near future. The proposal to inaugurate such a committee has been made repeatedly and by various influential bodies; but it is only recently that it has been entertained by government.

For the present, it is intended to create a commission consisting of 12 members, under the authority of the Imperial Health Department. Six of the members are to be physicians, and the other six are to be apothecaries, chemists, and pharmacognosists. It is proposed that they should meet once a year, that they receive mileage and per diem fees, and eventually also remuneration for special investigations or expenses necessarily incurred. A bill incorporating these provisions was introduced in the Bundesrath some time ago, but it is likely to remain unacted upon for some time, owing to the dissolution of the parliament.

AT a recent meeting of the Paris Pharmaceutical Society, some interesting facts transpired regarding the purity of commercial sulphate of quinine. The French Codex (of 1884) directs to mix 2 Gm. of the salt with 20 C.c. of distilled water, to shake thoroughly, then to place the test-tube for half an hour into *warm* water, occasionally shaking, finally to cool it to 15° C. (59° F.), and having maintained it at this temperature, to filter. The filtrate is then tested with water of ammonia, as directed in U. S. Pharm. Now while some authorities hold that it is a mistake to *warm* the mixture at all, and that the maceration should be conducted in the cold, a committee of the Paris Society (according to the *Chem. and Drugg.*) reported through Mr. Marty that the officinal text led to reliable results, if the temperature of previous maceration were kept at 60° C. (140° F.). As soon as this had been reported, Mr. Ferrand related a fact which had just occurred at the Pharmacie Centrale.

It appears a lot of quinine sulphate (from a manufacturer not named) had been received, and, as usual, submitted to the chemist for examination. He applied the modified Kerner's test (of the Codex), not taking particular care of the initial temperature of the maceration water, but being very careful to have the mixture kept at 15° C. (59° Fahr.) for the requisite time before filtering and adding the ammonia. The test having shown the chemical to be deficient in purity, the manufacturer was notified. But he replied his quinine did answer the test with maceration water at 60° C., and offered to prove it to the customer's satisfaction. He accordingly came to the laboratory and macerated his sulphate in water carefully kept in a drying oven at 60° C., and then showed that the chemical stood the ammonia test. Next the same quinine was assayed by the new chromic acid test recommended by Dr. de Vrij, and found to contain some six per cent of foreign alkaloids, a result agreeing with the conclusions arrived at by the chemist. Hence, said M. Ferrand, manufacturers have already found a way to circumvent the "improved" test proposed by the quinine committee of the Pharmaceutical Society, even before the test is formally adopted. The subject is to come up again for discussion at the meeting in January, when a battle-royal may be expected.

PROF. CHARLES WINKLER, the discoverer of the new element Germanium, in an elaborate paper in the *Journal für Praktische Chemie*, 1886, 183, reports that the new metal, which has been identified as the hypothetical "eka-silicium" prognosticated fifteen years ago by Mendelejeff, and which Prof. Winkler has termed "Germanium," has already become the cause of animosity. The editor of the *Moniteur scientifique* of Paris, Mr. Quesneville, has actually made a public demand of Prof. Winkler, to drop the name *Germanium*, which he says has "*un goût de terroir trop prononcé*" ["a too pronounced taste of terror"] and to substitute, in place of it, the name eka-silicium which had already been used by Mendelejeff. He forgets, however, at the same time, to propose a new name for Gallium, which was discovered by Lecocq de Boisbaudran some years ago. It is a discouraging sign for the standard of science in any country to see its representatives dragging personal questions or national sentiments into scientific discussions.

A BRITISH medical journal has commented upon the bad habit of naming drugs after the manner of antifebrine, antipyrine, etc., which should attract attention. The practice is quite as reprehensible as that of diseases by the names of physicians who are credited with their first description, *e. g.*, Bright's disease, Basedow's disease, Menière's disease, etc. It is not unlikely, however, that it is partly the outcome of the fashion of giving to newly-discovered agents of inorganic origin such exhaustively descriptive titles as effectually to prevent their employment in general use. It may well be hoped that chemists will have more regard for this fact in future, and

adopt, in their nomenclature, such titles for their new products as may cause less offence to propriety. A reasonable degree of accuracy might be achieved without going to an extreme degree of minuteness, and thereby avoid a name based upon presumed effects.

WE welcome to our exchange list *The Pharmaceutical Era* of Detroit, edited by H. B. Lyons, M.D. This new monthly commences its existence with a very interesting January number, and we wish it long life and prosperity. The novel feature of this new periodical is an index of the pharmaceutical literature of the world.

New York State Board of Pharmacy.—The next examinations will be held Friday, Feb. 25th, at Albany Syracuse, and Rochester, and on the following day at Watertown and at Jamaica.

Twenty-nine out of forty-two candidates were successful at the November examinations.

John M. Maris & Co., dealers in druggists' supplies, of 711 Market st., Philadelphia, suffered severely in the burning of their warehouse on the 21st of December. The loss on the building and stock was estimated at the time as over $100,000, the stock being insured for $60,000. The building occupied by J. B. Lippincott & Co., publishers, adjoining the one destroyed, was in great danger, but was saved.

The Ohio State Pharmaceutical Association will convene for their ninth annual meeting at Akron, Ohio, June 8th, 1887. The local management has secured an ample, well-located hall, and are making extensive preparations for the exhibit. Several large firms have signified their intention to exhibit, and a fine display is assured. An unusually large meeting is anticipated, as Akron is so well provided with railroad facilities. Parties desiring space in the exhibit hall are requested to confer, at an early date, with the Local Sec., Chas. Inman, Akron, O.

Very truly yours, CHAS. INMAN, *Local Sec.*

Subiodide of Bismuth, lately recommended by a Philadelphia physician as an application for ulcerating surfaces, is mentioned by Gmelin ("Handbook of Chem.," Watts, IV., 437) as a powder which is precipitated when the iodide of bismuth (formed by fusion of the two metals) is boiled with water. Its color is given as chestnut-brown by Berthelot; as red by Arppe. It can be formed by triturating 306 parts of subnitrate of bismuth with 165.6 parts of iodide of potassium and sufficient dilute hydrochloric acid to form a paste. The paste becomes yellow and is then thrown into water, where the reaction is completed, and the amorphous, heavy, adhesive, brick-red powder is precipitated. It is insoluble in water, alcohol, ether, and chloroform, and is decomposed by the strong mineral acids, with liberation of iodine, and by strong alkalies with liberation of bismuth oxide.—*Amer. Journ. Pharm.*

In the *Amer. Journ. of Pharm.* for January, Mr. England gives the following process as preferable to the "trituration process" above referred to, and more likely to yield a uniform product:

Take of Subnitrate of Bismuth	℥ iiss. gr. xxiv.
Nitric Acid	fl. ℥ iij.
Iodide of Potassium	℥ xi. gr. iij.
Hot Water	fl. ℥ xl.

The bismuth salt having been dissolved (in a porcelain capsule) in the acid with the aid of heat, twelve fluid-ounces of hot water are to be added in portions, with stirring after each addition. The iodide having been dissolved in the remainder of the hot water, the bismuth solution is added to it with active stirring, which is continued until decomposition is complete. Filter at once, wash precipitate with warm water, dry, and powder.

Detection of Albumin.—H. Prunier refers to Méhu's criticism of Tanret's reagent for albumin, and asserts that Musculus' method is similarly liable to error. The latter process, as applied to urine, for example, consists in pouring nitric acid carefully down the side of a test-tube containing the urine, so that the acid forms a layer underneath the urine. In presence of albumin, a whitish turbidity makes its appearance as the two liquids slowly mix. The author has, however, frequently obtained this turbidity in urine which gave no turbidity on boiling, or on heating with saturated sodium sulphate solution and acetic acid, nor with this acid and potassium ferrocyanide; microscopic examination does not show the crystalline forms of uric acid. Further investigation showed the reaction to be due to peptone. The method in question should always be controlled by boiling with sodium sulphate and addition of acetic acid.—*Pharm. Journ.* [5], 13, 501.

Rough on Fevers is a popular name suggested for antipyrin, antifebrin, and thallin.

CORRESPONDENCE.

La Fayette Mixture.

MY DEAR CASTLE:—I learn from Mr. H. A. Cassebeer, Jr., that his father, who is one of, if not the oldest druggist in New York, says that "La Fayette Mixture" was made by a druggist named Ludwig, in Greenwich street, for sailors, and that it was about the time of Lafayette's second or third visit to America, and that his advent was thus honored by this mixture being named after him. I am inclined to think that the formula did not originate in France, since it is not in the line of recipes I see in old books. Like syphilis, I think we must accord it an American origin. Very truly yours,

R. W. TAYLOR.

NEW YORK, December 20th, 1886.

[The above explanation, from one of our best authorities in genito-urinary maladies, is the most satisfactory that we have been able to reach with regard to the origin of this mixture. It has for a long time been in use in the New York Hospital, which, by the way, was formerly the local hospital for the mercantile marine service.—ED. AMERICAN DRUGGIST.]

Purification of Water with Alum.

DEAR SIR:—In the September number of the AMERICAN DRUGGIST I find a short account of the influence of alum in purifying dirty water.

In this country, there are many regions where there are no wells, or only such as have brackish water unfit for use. In such regions, the people for their supply of water depend upon large tanks, situated just on the outside of the villages, and filled only with rain-water, which is always very muddy. The people use this water for all purposes, as do all the animals—cattle, sheep, goats, etc.—belonging to the villages, and at night wild animals at some season of the year here come to drink. Thus the water is more or less stirred up most of the time and tastes of urine and manure dropped by the animals entering the water. For many years, whenever English troops are required to enter such a region, alum is always provided for purifying the water. Large earthen vessels, obtainable in every village and holding several gallons, are filled from these tanks and a quantity of alum is thrown in and well stirred. In a few minutes, even while we are watching it, the thick, dirty water becomes clear, as the dirt begins to gather in masses and settles to the bottom. This water is used for cooking and drinking purposes as freely as the best of well or spring water.

My father has for years used this method for obtaining clear, clean water for drinking and cooking purposes. In such cases, I suppose the amount of alum used is greater than is mentioned in the article noticed, hence the rapid cleaning, not more than three or four minutes being necessary.

We have never taken the pains to ascertain the quantity of alum necessary for a given amount of water, but use what we think from experience is necessary, measuring it in the hand.

I have myself used this purified water for days at a time, and never observed any ill effects from its use.

Though I have not taken the time to make a chemical test, I have never noticed the slightest taste of alum in the water, and, what is still more, the bad tastes of the dirty water have been in some ways removed.

Yours very truly,

M. B. CARLETON, M.D.

AMBALA, NORTHERN INDIA, November 15th, 1886.

In connection with this subject, the editor can add that during the war of 1861–5 he served as a surgeon for over two years on a naval vessel in the lower portion of the Mississippi. The water of the river was alone used for drinking, cooking, washing, etc., although it was at all times muddy and sometimes was fairly yellow with suspended earth and organic matter, most of the earth being aluminous. It was the practice of the stewards and cooks to draw enough river water to nearly fill a cask and then to pour slowly upon the surface (distributing as evenly as possible over the whole) about a quart of water in which had been dissolved a lump of alum about an inch and a half to two inches in diameter. This coagulated the vegetable matter contained in the water of the cask, and as it slowly settled to the bottom it carried with it all the impurities of the water, and left it perfectly clear, palatable, and soft. So far as two years' constant use of such water served to convey an opinion of its merits, it seemed to be thoroughly wholesome. This mode of treating the river water is not novel, having been employed for many years on the Mississippi and all over the south-western portion of this continent and in Central America.

Roach Poison.—Soxhlet recommends a mixture of 1 kilogr. angelica root, and 20 grammes of oil of eucalyptus as a sure vermin destroyer, the powder being strewn in infested places.

Pimento Industry.

In an interesting communication to *Nature* (reprinted by the *Chem. and Drugg.*) on "The Dispersion of Plants by Birds," Mr. D. Morris, of Kew, give the following particulars regarding the propagation of *Pimenta vulgaris* in Jamaica. The pimento industry, he states, depends entirely for its existence on the offices of frugivorous birds. The pimento of commerce is the dried fruit of the pimento allspice, or Jamaica pepper-tree (*Pimenta vulgaris*). No other country supplies this article (although the tree itself is widely distributed both in the West Indies and on the mainland), and the value of the exports of pimento from Jamaica have reached (in 1880) a total of £100,000. This is probably the largest spice industry in the world, and it is wholly dependent upon the action of frugivorous birds. In Luan's "Hortus Jamaicensis," Vol. II., p. 67, published about the end of last century, it is stated that "the usual method of forming a new pimento plantation, or 'pimento walk,' is nothing more than to appropriate a piece of woodland in the neighborhood of a plantation already existing; or, in a country where the scattered trees are found in a native state, the woods of which being fallen, the trees are suffered to remain on the ground till they become rotten and perish. In the course of twelve months after the first seasons (rains), abundance of young pimento plants will be found growing vigorously in all parts of the land, being without doubt produced from white berries scattered there by the birds, while the fallen trees, etc., afford them both shelter and shade." In a foot-note it is added that "birds eagerly devour the ripe seeds of the pimento, and, in eating them, propagate these trees in all parts of the woods. It is thought that the seeds passing through them undergo some fermentation which fits them better for vegetation than those gathered immediately from the tree." The present plan for forming pimento plantations in Jamaica is exactly as thus described. In fact, the planters firmly believe that no other plan is likely to produce good pimento walks, although it has been shown by experiments in the Botanical Gardens that by careful treatment plants of pimento can be raised in nurseries in large numbers exactly as any other economic plants. It remains, however, that all the present pimento plantations in Jamaica have been formed by the action of frugivorous birds, and to this agency alone we are indebted for the commercial supply of a most valuable and wholesome spice.

New Copper Reduction Test for the Estimation of Arsenic.

Using a standard square of copper as an indicator, H. Carmichael adopts the following method for the estimation of *very small quantities* of arsenic. A clean, smooth, polished sheet of pure copper, 0.05 Mm. thick, is cut into pieces 20 by 21 Mm. A strip 1 Mm. wide is cut nearly across the longer side and bent at a right angle to the general surface, the bent strips forming the handles for manipulating the squares. The substance under examination is digested with strong sulphuric acid, the solution reduced to a mall volume, and strong hydrochloric acid added. If the substance can only contain arsenic in the arsenious form, it is reduced to a small volume of liquid and strongly acidified with hydrochloric acid. The acidified solution is brought into a porcelain capsule, and a square of copper introduced. The capsule is placed over a small flame, and the square moved to and fro until it acquires the tint of the standard chosen. The copper is then removed, washed, and dried. The strength of acid is maintained, and squares made to succeed one another until there is no further discoloration. The total amount of arsenic present is obtained by multiplying the number of squares by the volume of standard arsenious solution necessary to color equally a single square, and subtracting an amount which it is shown by trial the last square has required less than a normal square. The method is illustrated by details of the analysis of a sample of wall-paper and of a human stomach. A copper square, 1 Mm. wide, is capable of disclosing and estimating 0.0000025 gramme of arsenious oxide.—*J. Chem. Soc.*

The Nature of Snake Poison.

With regard to the venom of the Indian cobra (*Naja tripudians*), R. N. Wolfenden finds that its toxicity is not due to any bacterium or living organism, nor to any alkaloid—alkaloids and ptomaines are entirely absent from the venom—nor is it due to any cobric acid, such as was described by Blyth (*Analyst*, 1, 204). The author finds that the crystals to which the name cobric acid was given are in reality composed of calcium sulphate. The venom, however, is sometimes faintly acid, sometimes neutral. The poisonous properties of the venom are due to its proteid constituents, which are as follows: (1) Globulin, which is always present and kills by causing asphyxia; (2) Syntonin, which is precipitated with magnesium sulphate with the globulin. It dialyzes through parchment paper to some extent. The poisonous property of the acid dialyzated is due to this proteid, not to cobric acid. Its action is similar to that of the globulin, but less intense. (3) Serum albumin; this is also toxic, producing paralysis; (4) Traces in some pecimens of hemi-albumose, and questionable traces of peptone are regarded as accidental.

With regard to the venom of the Indian viper (*Daboia Russellii*), it is found to be of the same reaction as that of the cobra; but here again there is no toxic acid, alkaloid, or living organism, but the proteids are the poisonous constituents. These are three in number: (1) Globulin, which greatly preponderates, as in cobra venom; (2) Serum albumin in small amount; (3) A proteid which possesses many of the properties of an albumose. True peptones do not occur, and it is probable that the substances described by Weir Mitchell and Reichart in crotalus, copperhead, and mocassin venoms as peptones are in reality albumoses.—*J. Physiol.* and *J. Chem. Soc.*

METHOD OF DRYING FATS.

When a fat or fatty acid is mixed with water, and it is to be dried, it is usually directed to expose it to a heat of 100° to 110° C., and perhaps to finish the drying by allowing the vessel to stand over sulphuric acid.

As, however, the fat or fatty acid floats on top of any water that may be contained in the same vessel, the escape of the water is rendered very difficult and uncertain, a fact which is well recognized by analysts, who adopt various contrivances to overcome this difficulty. Adolf Sonnenschein (in *Zeitsch. f. Anal. Chem.*, 1886, 372) proposes to pass a current of dry air through the melted fat, and uses the simple apparatus shown in the cut, which needs no further explanation.

We would like, however, to make one suggestion. The passage of a current of air through the mixture of water and melted fat in the flask (which is heated on a water-bath) may cause the mechanical aspiration of minute particles of fat thrown upwards with the water, and carry some of it into the tube leading to the pump. It seems, therefore, to be advisable to use a bulb-tube in place of a plain tube, for connecting with the air-pump.

Sonnenschein's apparatus for drying fat.

New Reaction of Hyposulphites.—Prof. L. L. de Koninck reports a new reaction for hyposulphites. If any of the hyposulphites of the alkalies are treated with metallic aluminium, in presence of sodium or potassium hydrate, they yield sulphides of the alkalies, which may easily be recognized in the solution by the characteristic reagents, such as nitro-prusside of sodium. The reaction probably takes place as follows, sodium hyposulphite being chosen as an example:

$Na_2S_2O_3$	+	2KOH	+	2H	=
sodium hyposulphite		potassium hydrate		hydrogen	
$= Na_2SO_3$	+	KS	+	$2H_2O$	
sodium sulphate		potassium sulphide		water	

The hydrogen is probably derived from the action of aluminium upon the potassium hydrate.—After *Zeitschr. f. Anal. Chem.*, 1887, 26.

New Method of Carbon Determination.—Heretofore, the determination of carbon in organic compounds has been accomplished by combustion, in the usual apparatus used for ultimate analysis. Recently, L. Legler has published a method for estimating glycerin by decomposing it with chromic acid, in presence of concentrated sulphuric acid; but he directed the products of combustion to be determined by the gravimetric method. Messrs. C. F. Cross and E. J. Bevan now announce (in the *Chem. News*) the important fact that the products may be estimated *volumetrically*, and that the execution is very simple, since it may be performed in Lunge's nitrometer. The authors promise an early report on the new method, which bids fair to render ultimate organic analysis more simple and less tedious, while at the same time permitting its execution without elaborate apparatus.

Filter with Greased Edge.—Certain substances have the disagreeable tendency to creep over the edge of the filter in which their solution has been poured. This may be entirely prevented, according to Gawalovski, by treating the edge or margin of the filter with paraffin, wax, or any fat free from inorganic matter (leaving no ash on combustion). Nothing will in this case creep over the edge of the filter, though the latter may have been (improperly) filled to near the margin.—*Zeitschr. f. Anal. Chem.*, 1887, 51.

Commercial Aspects of Coca and Cocaine.

FROM a report on the coca market in Hamburg, in the *Chem. and Drugg.* (Jan. 6th) we take the following:

In the beginning of the year, and again towards its close, business in coca leaves has been very brisk. The United States have been the most important purchaser lately, and the execution of the orders from that quarter caused the article to advance from 35 to 60 per cent. Truxillo leaves are looked upon with suspicion in many quarters, and are commonly denominated "spurious coca;" but recently this variety has apparently found more favor with manufacturers. The bulk of the deliveries went at once into consumption. The lowest quotations of the year were touched in September, owing partly to the accumulation of stock, which then reached 40,000 kilos; partly to the development of the exports of crude cocaine from South America; and last, but not least, to the forced sale of a large parcel at about one-half the estimated market value.

The result of the diminished value caused an almost entire cessation of shipments from South America, and at present no further supplies are known to be on the way.

The extent of the consumption of coca in Bolivia and Peru may be inferred from the statement, made on good authority, that only about one-tenth part of the total crop is exported.

The future supply of leaves depends upon the development of the manufacture of crude cocaine in South America. The price last paid in Hamburg for crude cocaine equals 7¾*d* per gramme—a figure which appears to be remunerative for the Peruvian maker. It is said that several German makers of cocaine have resolved in future to use only the Peruvian crude cocaine, and have made contracts for the delivery of that substance extending over several months. The recent arrivals of crude cocaine show a purer article than the first consignments.

Preservation of Rubber Apparatus

AN inquiry has been carried out under the direction of the French Minister of War, with the object of ascertaining the cause and the remedy for the peculiar changes which articles made of India-rubber undergo when kept in stock, the annual loss to the Government made from deterioration of this class of goods being very considerable. Experience shows that India-rubber, after a time, loses the very qualities which made it useful, for it becomes dry and brittle. Articles kept in boxes, such as Higginson's syringes, Esmarch's bandages and drainage tubes, are particularly liable to deteriorate. Unfortunately, the commissioners, after a long and patient investigation, are not able to suggest much more than could have been recommended before. They advise, for instance, that Esmarch's bandages should be taken out of the boxes at least once a month, unrolled and manipulated. Drainage tubes should be hung up in a cool place, or soaked in a non-putrescible fluid. Finally, all objects made of rubber should be kept in a cool, damp place at a constant temperature, and sheltered from light, heat, and frost. Seeing that in many cases these conditions cannot be complied with, it is recommended that the bandages should be made of pure leaf rubber in lieu of the elastic tissue usually employed. The purer the rubber, the less readily does it undergo these structural alterations, and the lighter it weighs; its weight is, therefore, a sure guide to its quality. In consequence of these inquiries, the Minister has ordered that, in future, all rubber articles are to be made with pure rubber of the best quality, preferably with the leaf rubber. The quality of the articles will be gauged by their specific gravity in order to insure the purity of the material employed.—*Brit. Med. Journ.* and *Chem. and Drugg.*

Test for the Presence of "Saccharin" in Sugar.—H. Reishauer publishes the following method of detecting the new sweetening principle "saccharin" in sugar: one hundred gm. of sugar are let stand for some hours in a closed vessel, with 150 to 200 C.c. of ether, shaking frequently. If a sample of sugar has an alkaline reaction, a strong aqueous solution is used instead of solid sugar; it is slightly acidified with phosphoric acid, and then shaken out with ether. The ethereal solution is then drawn off with a siphon and filtered. In both cases, the ether takes up a large part of the saccharin, which is obtained in the residue, after distilling off the ether, almost free from sugar. The presence of saccharin is best demonstrated by cautiously heating the residue in a platinum crucible with a mixture of 6 parts pure sodium carbonate and nitre, and finally igniting, not too strongly. Saccharin contains sulphur, which is thus completely converted into sulphuric acid.—*Biederm. C. B. f. Agrik. Chem.* and *Chem. News.*

Germanium, according to recent experiments by its discoverer, Prof. Winkler, has the atomic weight 72.32 (not 72.75 as first announced); that it fuses at 900° C., and at a somewhat higher temperature appears to sublime. Its density at 20.4° C. is 5.419; its specific heat, 0.0758, and atomic heat, 5.48. It forms dyad and tetrad salts.—*Chem. and Drugg.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,847.—**Dispensatory of Valerius Cordus** (W. J. M., Philadelphia).

"I have a copy of the early dispensatory of Valerius Cordi, of the date 1571, formerly owned by and having the autograph of John Redmond Coxe. Do you know of any having an earlier date?"

You will find a sketch of Valerius Cordus and of his Dispensatory elsewhere in this number. Your edition is not a very early one, but still, it is earlier than those in our possession.

The library of the Surgeon-General's office in Washington contains a copy of the first, undated, duodecimo edition (which, in the Index Catalogue is erroneously classed as 16°, and referred to the year 1540); also an edition of 1563.

No. 1,848.—**Chlorodyne** (W. M.).

One of the latest formulæ presented for this preparation is that of B. L. Maltbie, of Randolph, N. Y., in the *Western Druggist.* It is as follows:

Morphine Hydrochlorate	gr.	16
Alcohol	fl. dr.	12
Tinct. Cannabis Indica	fl. dr.	4
Oil Peppermint	min.	6
Tinct. Capsicum	min.	15
Chloroform	fl. dr.	4
Hydrocyanic Acid. Dil	fl. dr.	1
Glycerin, enough to make	fl. oz.	4

Dissolve the morphine in the alcohol, add the tincture of cannabis indica and other ingredients, in the order named.

No. 1,849.—**Impervious Corks** (Mel.).

Perhaps either one of the two following methods may answer your purpose:

1. (Bousquet's patented process.) Heat the corks to 100° C. (212° F.) in order to kill all spores which they may contain. Then, while still hot, dip them into a solution of 1 part of albumen (egg albumen or blood albumen) in 200 parts of water, and afterwards into another containing 1 part of tannic acid, ½ part of salicylic acid, and 200 parts of water. This causes a formation of tannate of albumen in the pores of the cork, and the salicylic acid, at the same time, acts antiseptically.

2. Make a solution of 4 parts of gelatin in 52 parts of water, and add to it, in the dark, or in a place illuminated with artificial (non-actinic) light, 1 part of bichromate of potassium or ammonium or sodium, previously likewise dissolved in water. Having first treated the corks with vapors of ether or benzol to render them thoroughly dry, dip them into the prepared solution, and then expose them several days to the sun-light, turning them carefully over so as to make the light fall upon every part of each cork. The coating of gelatin and chromic acid becomes insoluble under the influence of sun-light.

No. 1,850.—**Antipyrin** (W. F. B.).

1. "As the new febrifuge antipyrin is fast coming into use here, I would like to know something of its composition and general properties. I have read two or three articles in your journal in regard to its therapeutic use, but I have been unable to find anything relating to its manufacture.

2. "The last ounce I bought came in granular form. This I do not understand, as that which I dispensed previously was in light, feathery crystals, similar in appearance to morphine sulph. The container (a small tin box) is a *facsimile* of those containing the light crystals, so that I suppose the same manufacturers prepare it in both forms."

Very complete articles on this subject were published by us in 1884, Oct., p. 193, and Dec., p. 239. In 1885, Jan., p. 14, Nov., p. 210.

These articles will give you all the available information.

The substance is made by a patented process, the only manufacturers being Meister, Lucius & Brüning, of Höchst on the Rhine, and the granular powder is the most common form in which it appears in commerce. It will be practically useless for you to attempt to make it. Copies of the four numbers containing the articles referred to will be supplied for fifteen cents each.

No. 1,851.—**Sulpho-ichthyolate of Ammonium** (W. F. B.).

"Can you give me a formula for sulpho-ichthyolate of ammonium?"

The common name of this substance is *ichthyol*, and you will find an account of the manner of preparing it in the AMERICAN DRUGGIST for June last.

No. 1,852.—**Formularies** (E. A.).
See answer to queries on p. 197 of our October number of last year.

No. 1,853.—**Ether Emulsion** (M. V.).
This correspondent desires us to point out a method by which he may be enabled to cause an ethereal solution of a fat or oil to separate from an aqueous liquid remaining behind. We judge from his letter that he has been experimenting with cod-liver oil emulsions, and has tried to dissolve the oil by agitation with ether.

If the mixture had an alkaline reaction and the ether was anhydrous, the separation will be rather slow; indeed, sometimes it will not be perfect after many days. However, there are various ways in which this may be accelerated. One is to warm the mixture, if possible under an upright condenser, but not enough to cause the ether to boil. Another is to add some water; in fact, it is not advisable to use strong ether for such extractions, as the ether will abstract a certain amount of water from the mixture so as to saturate itself with it. The proper kind of ether to use is that which is already saturated with water—the so-called washed ether. Often the addition of a little absolute alcohol will assist the separation. Or, again, a little solution of a stearate may be used, according to Soxhlet's proposition. For this purpose, about 15 Gm. of the mass of a stearin candle is heated in a water-bath with 25 C.c. of alcohol and 10 C.c. of solution of potassa (spec. grav. 1.270) for a few minutes until solution has taken place, and the liquid is then diluted to 100 C.c. A very small quantity (a limited number of drops only) of this solution is sufficient to hasten the separation.

When it is not necessary to render or to keep the liquid alkaline, and an acid may be added without interfering with the free condition of the fat or oil, the ethereal solution will be found to separate without difficulty.

No. 1,854.—**Test for Fusel Oil** (D. A. V.).
A great many methods have been recommended, particularly of late years, for detecting and estimating fusel oil, but none of them is perfectly satisfactory when only small quantities are present. As our correspondent only asks for a qualitative test, we will give one which has been recommended by Uffelmann as one of the best.

In the first place, it is necessary to extract the fusel oil that may be contained in any spirituous liquid (such as alcohol, whiskey, brandy, etc.) by dissolving it out with ether or chloroform. For this purpose, the liquid is evaporated at as low a temperature as possible, until only a watery residue or only a slight residue remains. This is then shaken several times with ether or chloroform, and the ethereal or chloroformic solutions evaporated in a porcelain capsule until all the volatile solvent has escaped. Any fusel oil that has been present in the sample will now be contained in the residue. A test-liquid is now freshly prepared by dissolving one part of methyl-violet in 100 parts of water, and adding enough of a two-percent hydrochloric acid to render the liquid decidedly green. Of this liquid about 3 or 4 times as much in volume as the residue in the capsule amounts to is allowed to run into the latter. If any fusel oil was present, there will appear *immediately* some *reddish-blue* droplets which will float upon the surface of the still green or greenish liquid. This is due to the fact that the fusel oil has the property of extracting from the slightly acidulated green solution of methyl-violet some portion of the latter in its undecomposed form, with its natural reddish-blue color. Ethereal oils can produce the same result as fusel oil, but a great deal of shaking is necessary to make them extract the color, and it is then only pale blue, not reddish-blue, and never appears by merely pouring in the test-liquid as above directed.—After *Dingler's Pol. J.*, 261, 439.

No. 1,855.—**Oil of Rhodium** (S.).
Oil of Rhodium was formerly distilled from Lignum Rhodii, derived from *Convolvulus Scoparius* L. and (according to De Candolle) probably also from *Convolvulus floridus* L. It was at one time erroneously supposed to be derived from *Genista canariensis* L. Rhodium wood, or Canary Islands rose-wood, is seldom to be had in the market at the present time. It yields on distillation an essential oil which has some remote resemblance to oil of rose, and used to be largely employed to adulterate the latter before oil of rose geranium made its appearance. The American or Jamaica rose-wood is derived from *Amyris balsamifera* L. This is only used in cabinet work, and no volatile oil is obtained from it. The name *Lignum* and *Oleum Rhodii* is said to be derived from the fact that the Canary Islands rose-wood reached the continent by way of Rhodus, where Spanish merchants had settled already in the 15th century. What is now sold in the market as Oil of Rhodium is probably always an artificial mixture. The usual components are said to be oil of rose geranium and oil of sandal-wood.

No. 1,856.—**Methylal** (Dr. G. K.).
This is one of the new hypnotics recently recommended, but up to the present time only rarely employed, at least in this country, so far as we have been able to learn. It is a member of the group of *acetals*, which are compounds formed by the union of aldehydes with alcohols, water being eliminated during the reaction. For instance, ordinary aldehyde (ethylic aldehyde) is C_2H_4O. When this unites with 2 molecules of alcohol, $2C_2H_5.OH$, there is formed ethylic acetal, usually called merely "acetal," $C_6H_{14}O_2$ or $CH_3.CH.(C_2H_5.H)_2$. *Methylal* is the acetal of the methylic series, sometimes also called *formal*, being the dimethylate of methene, $CH_2.(CH_3.O)_2$ or $C_3H_8O_2$. This is a colorless, mobile liquid, of the spec. grav. 0.8551 at 17°C., boiling at 42°C., soluble in water, alcohol, fats, and ethereal oils, of a burning, aromatic taste, and possessing an odor reminding one of chloroform and acetic acid. It has been used as a hypnotic hypodermically, and with good effect, according to some reports. It has also been recommended as a liniment in nervous affections, and as an antidote in strychnine poisoning.

No. 1,857.—**Urethan** (M. S.).
We have published various articles explaining the chemical and therapeutical properties of this hypnotic (see AM. DRUGG., 1885, 204; 1886, 209, 216, 200). The reports on its usefulness are very contradictory. To judge from the results so far obtained with it in the public hospitals of the city of New York, it is by no means to be relied on as a general and safe soporific. Sometimes it produces gastric disturbances. The same is reported by other recent writers. Drs. Otto and König have tried it in the stage of excitement of paralytic patients, and found it almost or entirely useless. But in some cases, particularly in children, it was found moderately effective.

Dr. H. Rottenbiller, of Pest, has recently reported that he has used urethan successfully upon the insane, by hypodermic injection. He used from 1 to 3 injections of 5 minims each of a 30% aqueous solution of urethan, and succeeded thereby in producing a quiet sleep lasting 6 or 8 hours, without untoward symptoms or the formation of abscesses.

No. 1,858.—**Bartholow's Depilatory** (N. Y.).
Prof. Bartholow recommends a mixture of

Sulphide of Barium	1 part
Caustic Lime	1 part
Starch	2 parts

which is to be mixed with alcohol, and allowed to remain in contact with the parts until the hairs can be easily removed.

No. 1,859.—**Free Mineral Acids in Vinegar** (E. F. H.).
Free mineral acids may be detected and estimated in vinegar in various ways. A very simple method for detecting *sulphuric acid* is as follows:

Evaporate the vinegar (say about 4 fl. oz.) to a small bulk, allow to cool, and add about five times its volume of strong alcohol. All the sulphates will thereby be precipitated, but any free sulphuric or other mineral acid which has not been volatilized at the temperature of evaporation will be dissolved by the alcohol. The alcoholic solution is then filtered, diluted with water, the alcohol dissipated by boiling, the sulphuric acid precipitated by barium chloride, and the precipitate washed, dried, ignited, and weighed.

A still more delicate method is that of Casali. 20 Gm. of the vinegar is ground up in a mortar with about 80 Gm. of finely powdered porcelain (previously treated with hydrochloric acid to remove every trace of alkali, and thoroughly washed and dried), so that the mixture is not moist to the touch. If necessary, more of the powder must be taken. The whole is then ground up with 50 C.c. of ether (previously shaken with magnesia and water to neutralize any trace of acid), filtered and washed with ether. The filtrate is then shaken with a little distilled water, the ether distilled off, and the residue precipitated with barium chloride, 0.0005 Gm., or as little as $\frac{1}{120}$ grain of free sulphuric acid can be detected in this manner.

Jähring tests for free mineral acids by adding sulphide of zinc which is unaffected by acetic acid. If either sulphuric or hydrochloric acids are present, the odor of hydrosulphuric acid will be given off.

Hager recommended the following test. Into a small test-tube place 1 or 2 drops of Gurjun balsam, together with 35 or 40 drops of pure acetic acid and warm to about 140° F. Now add 2 to 3 drops of the vinegar to be tested. If free hydrochloric acid was present, there will immediately be produced a bluish-violet color. Sulphuric acid produces the same tint, but more slowly.

No. 1,860.—**Jamboo or Jambool Seeds** ("Pharmacy").
Jamboo or Jambool seeds have recently been highly recommended, in form of powder, as a remedy in diabetes. The use of the drug is said to diminish the amount of urine secreted, and to cause the disappearance of sugar within 48 hours after taking the drug, which is administered in doses of about 5 grains every few hours. During theti me that the patients are under the influence of the drug, they are said to be able to take amylaceous food with impunity.

Jamboo (*Jambu* or *Jambû*) is the Sanskrit name of the tree and of the fruit. In the Bombay presidency it is known, at the present time, as *jâmbûl* (according to Prof.

W. Dymock, "Vegetable Materia Medica of Western India." 2d ed., 8vo, Bombay, 1885).

The seeds are derived from *Eugenia jambolana* Lam. (= *Syzygium jambolanum* De C. *Prodrom.* III., 259), a large and beautiful tree found almost over the whole of India, being used both as an ornamental and shade tree, as well as for its fruit. It is also indigenous in the Indian Archipelago and in Australia. The bark is strongly astringent, and dyes excellent durable browns; it also yields an extract resembling kino.

The Jambu tree plays an important rôle in Hindu mythology. The Purâna's (particularly the Vishnu-Purâna), in giving an account of the created world, place the immense Mount Meru in the centre of a group of seven large insular continents, one of which comprises India itself. Upon the mountain Gandhamâdana, situated upon this continent, stands an immense Jambu tree, eternally alive and bearing flowers and fruit, forming, as it were, the grand standard of India. From this tree the whole continent receives the name Jambu-dvîpa, and this was subsequently used by the Buddhists as a name for India itself. The legend says that this gigantic tree bears fruit as large as elephants; when they fall upon the crest of the mountain from being over-ripe, they burst and pour out juice enough to form the Jambu River, the waters of which are drunk by the inhabitants, and render them content and happy, so that they suffer neither from excessive labor ("perspiration"), nor from bad effluvia of the soil, nor from old age.

All this, and much more that could be said, shows in how great esteem the Jambu tree has always been held in India.

Prof. Dymock describes the fruit and bark as follows: "The fruit, unless improved by cultivation, is about the size and shape of an olive, of a purple color, and very astringent; within it is a white, papery shell, inclosing a large green kernel, also very astringent. The bark is gray and fissured externally; internally it is red and fibrous; its minute structure is remarkable in having several rows of very large, pitted, oblong cell-walls, which can be easily seen with the naked eye. The odor is like that of oak-bark, and the taste very astringent. No analysis of the fruit or bark appears to have been made."

At present there is only very little of the seed obtainable here at New York, but an invoice is shortly expected.

No. 1,861.—**Deodorizing Alcohol** (L. R. & Co.).

These correspondents request us to state how they may deodorize alcohol. They fail, however, to inform us what the nature of the odorous matter is which the alcohol contains. It depends entirely upon this whether the operation of deodorizing it will be successful or not, within economical limits. We would, therefore, suggest that we be informed first what odorous matters the alcohol contains or what it had been used for; and second, what its strength is.

No. 1,862.—**Nitroglycerin Preparations** (J. S. D., and Newark).

The most simple and convenient method of administering nitroglycerin in asthma, Bright's disease, and other affections, is in form of *alcoholic solution* containing 1 per cent of nitroglycerin, or, as it is also called, glonoin. Regarding this, we have to state that, up to about six months ago, the quality of the commercial solution was perfectly satisfactory. Only a few houses had the facilities or had made arrangements for supplying the solution, nearly all other dealers purchasing their supply from these firms. About six months ago, it was observed by a number of physicians that the article then supplied had apparently no physiological effect whatever and, on inquiry among others, this was confirmed. The previous uniform reliability of the commercial solution, contrasted with its sudden apparent inertness, led to the suspicion that some mistake had been made in making the 1-per-cent dilution on the part of the firms engaged in its production. So far as we are aware, these firms obtain their supply direct from certain nitroglycerin works, where the latter is dissolved in 9 parts of alcohol, thus making a 10-per-cent solution. It is in this strength that it reaches the firms alluded to, and they subsequently dilute to 1 per cent. In doing this, an error was probably committed in this way that a quantity of the solution already reduced to 1 per cent was subsequently mistaken for a 10 per-cent-solution, and again diluted to 1%, which produced, of course, a 1 in 1,000 solution, which is altogether too weak for general use. The attention of these firms and of wholesale houses was directed to this fact by one of us, and all stock containing nitroglycerin, and found inert, was at once cancelled. Since then there has been no trouble. Great care is now exercised in ascertaining the proper strength of the solution.

While it is a comparatively simple matter to determine the nitroglycerin held in solution by the alcohol, by precipitating it with water, separating, and weighing, yet this is not an attractive operation, as it may lead to accidents in the hands of the unskilled. For practical purposes the best test is a physiological one. Place *one* drop of the 1% solution upon your tongue. In about 5 to 10 minutes a peculiar form of frontal and temporal headache will be felt which will pass off in the course of an hour or so. Any sample which fails to produce this symptom after the administration of 1 drop (or on repeated trial, 2 drops), may be rejected as worthless.

Nitroglycerin tablets.—These are officinal in the British Pharmacopœia, but no method is there given for their preparation. They may be made by dissolving nitroglycerin in ether, and mixing a definite quantity of this solution with a weighed amount of powdered chocolate to which some powdered gum arabic may be added. For instance, the following proportions will produce tablets containing 1%:

Nitroglycerin	1 part.
Chocolate, powd	130 parts.
Gum arabic, powd	70 "

To be divided into 100 tablets. The nitroglycerin requisite for making these may be obtained by precipitating the 10% solution with water, best in burette, allowing the nitroglycerin to settle, then transferring as much of it as can be withdrawn to a tared flask, and to add to it the requisite amount of ether to dissolve it. The powders are then taken in the above-named proportions.

These tablets may also be made after the process of Dr. Fuller (see our preceding number).

Caution.—We desire to draw attention to a possible source of danger in connection with the alcoholic solution of nitroglycerin. If a vessel or bottle containing the 1-per-cent solution is allowed, by oversight, to remain uncorked, and should be diminished in volume by evaporation, it will become so much more energetic in its effects that it may produce distressing symptoms. Moreover, should any of the solutions, *particularly the ten-per-cent solution*, be broken, in a place where the liquid might be soaked up by wood or other porous material, a dangerous explosive might thereby be produced. In our judgment it would be preferable to choose another menstruum for the nitroglycerin. Such a menstrum should be non-volatile and should form with the nitroglycerin a non-explosive mixture, the same as is the case with ethylic and methylic alcohols. It remains to be seen what will turn out to be the best solvent, possibly some fixed oil. For the present we advise to prepare both the 10 and the 1% solutions so that they contain at least 25 per cent by volume of glycerin.

No. 1,863.—**Rosin Oil** (Rosin).

This oil is made use of not only for legitimate, technical purposes, but also for adulterating other oils.

When common pine rosin (colophony) is distilled (dry) in iron retorts, it splits up into a number of substances which may be enumerated as follows: About 5½% of watery liquid containing pyroligneous acid; about 11½% of crude, light rosin oil, of spec. grav. 0.890; about 50% of crude, heavy rosin oil (having a bluish color), of spec. grav. 0.930; about 10½% of still heavier oil (called in Germany "Cod-Oel" or "Thran-oel") of spec. grav. 0.940; and about 18½ of pitch, the rest being lost.

The light rosin oil is a mixture of low-boiling hydrocarbons with volatile acids and other bodies. When it has been properly purified, it is known abroad as camphine or pinoline, though in this country these products are not designated by special names.

The crude, *heavy* rosin oil is purified by boiling with water, then drawn off into large tanks, where it is mixed with plaster of Paris, which, during gradually settling, carries down with it all suspended matters. The oil, partly purified in this manner, is used for axle-grease and other common purposes.

The fully purified rosin-oil, so-called "Cod-Oel," is prepared in the following manner: The usual charge, say about 800 lbs. of crude rosin oil, is put into a well-cleansed still, and 60 lbs. of freshly prepared solution of caustic soda of spec. grav. 1.355 (38° B.) are added, together with 20 lbs. of freshly prepared milk of lime. The mass is well stirred during one hour, and then subjected to distillation at a moderate heat. At first, the water and some light rosin oil pass over, afterwards the heavy oil of a light-yellow color. Towards the end of the distillation, the oil becomes darker and of a greenish-brown color. The light-yellow oil may be rendered as colorless as water by rectifying it with more solution of soda and milk of lime. The first and last portions of this are caught separately and added to the next charge. The middle fraction constitutes the fully purified oil.

No. 1,864.—**To Render Glycerin and Glue Insoluble** (J. E. L.).

"How can a mixture of glue and glycerin be made insoluble in water?"

The combination of glue and glycerin is a mechanical one only, that is, glue is soluble in water, and this solution is miscible with glycerin; the water may be evaporated and the glue and glycerin will remain, so that the former may be said to be dissolved by the latter, though the compound may be quite tough. Indeed glue is soluble, even in the cold, in glycerin, but it requires a long time to be dissolved. Now the glue may be rendered insoluble by combining it with chromic acid and exposing it to the sun-light. If a rather thick bulk of the mixture is to be treated, render the mixture of glue and glycerin liquid on a water-bath, in a room lit by artificial (yellow) light only; incorporate with the solution some hot solu-

tion of bichromate of potassium. Of the latter about 1 oz. is required for every 3 lbs. of glue. The effect of sunlight upon such mixtures is that the chromic acid is reduced to chromic oxide, which combines with the glue apparently only mechanically, and renders it insoluble in water. According to Eder, the glue is not altered chemically. Now the glycerin, mixed with the glue, is susceptible of being acted on by the chromic acid, and to be decomposed if it remains long in contact with it. But under ordinary circumstances, we believe it will remain mostly unaffected. It will probably remain mechanically inclosed between the molecules of glue and chromic oxide. At all events, only that which is near the surface will probably be dissolved out by water. This point you will have to determine yourself. Instead of bichromate of potassium, chrome alum may be used, according to Swan.

No. 1,865.—**Manufacture of Oiled Silk** (J. E.).

"Will you kindly give the composition of oiled silk and the manner of applying the compound to silk or muslin?"

Oiled silk or oiled muslin is prepared by stretching suitable pieces of colorless silk or muslin fabrics upon frames, and applying to them a varnish made from 6 parts of boiled linseed oil, ½ part of rosin, and ½ part of turpentine. According to others, the varnish is preferably made by boiling the 6 parts of oil with 1½ parts of litharge and ½ part of minium. The manufacture of these articles is not without some risk, as the rapid drying of fatty oils in contact with combustible material may cause spontaneous ignition. Several cases of the destruction of oil-muslin factories have occurred within the last decade or so.

No. 1,866.—**Improved Fehling's Solution** (U. S.).

We have published the composition of Schmiedeberg's improved Fehling's solution on page 229 of our volume for 1885, where a note will also be found on the chemical character of mannite, which is recommended as a substitute for Rochelle salt. The formula is briefly as follows:

Copper sulphate, crystals	34.632 Gm.
Mannite, pure, cryst	16 "
Solution of Soda, spec. grav. 1145	480 C.c.
Distilled Water, q. s. to make	1 liter.

Dissolve the sulphate of copper in about 200 C.c. of water, add the mannite previously dissolved in 100 C.c. of water, then add the soda solution, and finally make up with water to 1 liter.

The solution keeps extremely well. Even should it deposit a small trace of oxide of copper on standing (owing perhaps to the presence of slight impurities), it will still be fit for use.

There is, however, one feature connected with this which has not been alluded to. This is the quantitative value of the solution towards glucose. The value of the original Fehling's solution towards the latter substance, under exactly known conditions of dilution, temperature, etc., has been very carefully determined by Soxhlet. It remains, however, to be seen whether the substitution of mannite for Rochelle salt will make any difference in this relation.

That the solution, made with mannite, keeps well can be confirmed by us from practical observation. So long as the reagent is to be used only qualitatively, its true quantitative relation to glucose need not be taken into consideration. But this must be done as soon as it is to be used for quantitative purposes.

No. 1,867.—**Solution for Making Soap-Bubbles** (H. H. S.).

As a supplement to our answer to query 1,842 in our last issue, we give the following formula of a solution which is said by Mr. J. Boyle, of Glasgow (in the *Chem. and Drugg.*), to yield bubbles of very large size which do not burst readily and sometimes will last for many hours if properly protected:

Castile Soap, shavings	1½ parts
Glycerin	15 "
Water	20 "

1,868.—**King's Expectorant** (R. & Co.).

This was originated by Dr. John King, of Cincinnati, the author of the "American Dispensatory." It is prepared as follows:

Lobelia, herb	1 tr.oz.
Sanguinaria root	1 "
Skunk Cabbage root	1 "
Wild Ginger (Asarum canadense) root	1 "
Pleurisy herb (Asclepias tuberosa)	1 "
Water, or Vinegar	16 fl. oz.
Alcohol	48 "

Reduce the drugs to a moderately fine powder, and form a tincture, by maceration or percolation, using more of the menstruum, in the above-given proportions, so as to obtain 4 pints of tincture.

No. 1,869.—**Metallic Cement** (Boston).

Probably the best metallic cement is that known as "Diamond Metallic Cement." It is prepared by intimately mixing 10 parts of prepared chalk, 15 parts of litharge, 50 parts of graphite, and 5 parts of dry slaked lime, and thoroughly incorporating with it 20 parts of linseed oil. This compound must be warmed before use.

Another excellent cement is obtained by intimately mixing finely powdered oxide of lead with just enough glycerin to make it plastic. This hardens very soon on exposure to air.

Many others may be mentioned, but the above will be sufficient for the purposes of our correspondent, who wants to cement iron tubes into an iron-tank without rubber washers below the lock-nuts.

No. 1,870.—**Ink for Type-Writers, etc.** (U. S. A.).

In answering query 1,810, we referred our correspondent to a paper by Mr. Furst published in our May number of 1886. He writes to us, however, that he did not have reference to ink that was to be used on a *ribbon*, but to ink that is to be used in the Hall type-writer and in rubber-stamps, where the impressions are taken directly from the type.

We have several formulæ on our files for this purpose, but cannot say how well these will work, as we have had no experience with them. Here are several:

Dissolve the desired aniline color (which must be water-soluble) in 10 parts of water to saturation, or at least to such an extent that the required depth of color is obtained. In this dissolve 10 parts of best gum arabic by maceration and subsequent heating; finally, add 10 parts of glycerin.

Dissolve 20 parts of the aniline color in 80 parts of boil ing water; then add 10 parts of glycerin and 5 parts of syrup. This is given by Hager, who also recommends to preserve it from spoiling by adding to each 100 Gm. of the preparation 5 drops of sulphide of carbon.

From considerable experience which we had with the preparation of colors suitable for stencilling, we venture to make a suggestion. It will be seen by examining the last-mentioned formula that it must be quite liquid, probably more so than is desirable. Now, the best "thickening" medium for such mixtures, and one which imparts to them also a tendency to dry more rapidly, is *dextrin*. If we had to make such an ink, we would try various proportions of water, glycerin, dextrin, and coloring matter, until we had struck the proper consistence. Some of the aniline colors used for such purposes are sold in hard lumps. They are, however, easily dissolved by boiling with a little water to which the glycerin may be added at once.

Our correspondent also wants to know what will best remove from paper the *aniline purple* ink he wrote his letter with. This may be done by using a moderately strong alcoholic solution of oxalic or citric acids.

No. 1,871.—**Putz-Pomade** (Dr. B.).

The compound mentioned in our November number, page 218, as being composed of chalk 250, white bole 100, carbonate of lead 125, magnesia 20, and oxide of iron 20 parts is known as Belgian Putz-Powder, and probably sold dry in form of powder. We do not know it from personal observation. We do not think that these ingredients are the same as those contained in any of the commercial putz-pomades, which are made with oleic acid or other fatty substances. These putz-pomades differ very much in composition. Some consist of Armenian bole with enough oleic acid to make a paste, and some flavoring ingredient, such as oil of mirbane. Others contain rotten stone, or oxide of iron, or siliceous earth.

No. 1,872.—**Prescription Query** (B.).

This correspondent sends us a prescription which calls for

Pulv. Cantharidis	gr. 10
Olei Therebinthinæ	fl ʒ 3

from which 40 pills are to be made.

We can hardly realize that any physician of common sense would write such a prescription. Each "pill" would, of course, have to contain 4½ *minims* of oil of turpentine; and to hold this quantity of liquid, together with ¼ grain of cantharides, a large bulk of inert powder would be necessary. The ingredients can be put into capsules, perhaps, but even then some addition of an inert powder will be advisable, powdered althæa root being perhaps one of the best.

No. 1,873.—**Iron Wire for Iron Preparations** (B.).

The best iron wire for making iron preparations is the fine, *bright* (not dull and black) piano wire of the trade. Other kinds of fine wire, such as card-teeth are made from, or card-teeth themselves, and iron turnings thoroughly deprived of grease or oil, are equally suitable.

The formula for making syrup of iodide of iron in the United States Pharmacopœia is the one which you should follow.

Morphiomania has made great strides in France within the last few years. In Paris its victims almost rival those of alcoholism. At Bellevue (Paris) a hospital has been opened for the care, and, if possible, the cure of those patients. The cure of it is, however, very rare. It is found that both the use and the deprivation of the drug create a tendency to suicide in the victims; and at Bellevue there are cushioned rooms for some of the patients, and a constant watch kept on all.—*Chem. and Drugg.*

FORMULAS.

SELECTIONS FROM THE HOSPITAL FORMULARY

OF THE DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION OF THE CITY OF NEW YORK.

(Continued from page 14.)

V. MIXTURES FOR EXTERNAL OR TOPICAL APPLICATION.

173. *Acidum Carbolicum Iodatum (Iodized Phenol).*

℞ Iodi.....gr. 240
Acidi Carbolici.....℥ 1
Glycerini.....fl. ℥ 1

Dissolve the iodine in the carbolic acid with the aid of a gentle heat; then add the glycerin.

174. *Balsamum Styracis.*

℞ Styracis Purificati.....part. 40
Olei Olivæ..... " 5
Alcohol..... " 5

Mix. Used for the same purposes as Balsam of Peru.

175. *Collodium Carbolisatum (Carbolic Collodion).*

℞ Acidi Carbolici.....gr. 30
Olei Ricini.....♏ 30
Collodii.....q. s. ad fl. ℥ 1

Dissolve and mix.

176. *Collodium Iodoformi.*

℞ Iodoformi.....gr. 60
Ætheris Fortioris.....♏ 30
Collodii.....q. s. ad fl. ℥ 1

Dissolve and mix.

177. *Collunarium Quininæ (Quinine Nasal Douche).*

℞ Quininæ Sulphatis.....gr. 1
Sodii Chloridi.....gr. 30
Aquæ.....fl. ℥ 1

Dissolve. Used in nasal catarrh, hay-fever, etc., a little being placed in the palm of the hand and drawn up the nose, or applied as a spray.

178. *Collyrium Atropinæ.*

℞ Atropinæ Sulphatis.....gr. 2
Aquæ.....fl. ℥ 1

Dissolve. Two drops to be put into the eye three times daily, in iritis and keratitis. (*Dr. W. F. Mittendorf.*)

Note.—To prevent this solution from spoiling, 5 grains of boric acid may be dissolved in each fluidounce.

179. *Collyrium Plumbi et Opii (Bureau O. D. P.).*

℞ Liquor. Plumbi Subacet ...fl. ʒ 2
Vini Opii.....♏ 20

Mix. Add six drops of the mixture, previously well shaken, to half a tumblerful of water, and bathe the eyelids six times daily with it. In blepharadenitis. (*Dr. W. F. Mittendorf.*)

180. *Embrocatio Iodi, McCready (McCready's Paint).*

℞ Chloroformi.....fl. ʒ 1
Tinct. Aconiti.....
Tinct. Iodi Comp.....āā fl. ʒ 2

Mix.

181. *Embrocatio Iodi et Tiglii (Carson's Paint).*

℞ Olei Tiglii.....♏ 30
Ætheris Fortioris.....♏ 60
Tinct. Iodi Comp.....fl. ʒ 2½

Mix.

182. *Gargarisma Aluminis Ferrati Compositum.*

℞ Ferri et Ammonii Sulph. (U.S.Ph.),
Potassii Chloratis.....āā ʒ 1
Aquæ.....fl. ℥ 16

Dissolve. Used as a gargle, mornings and evenings. In subacute pharyngitis, in ear-troubles. (*Dr. W. F. Mittendorf.*)

183. *Gargarisma Boracis.*

℞ Sodii Boratis.....ʒ 2
Glycerini.....fl. ʒ 1
Aquæ Rosæ.....q. s. ad fl. ℥ 8

Dissolve and mix.

184. *Glyceritum Acidi Tannici (Glycerite of Tannic Acid).*

℞ Acidi Tannici.....ʒ 1
Glycerini.....q. s. ad fl. ℥ 4

Triturate the tannic acid with 3 fl. oz. of glycerin in a heated mortar to a smooth paste; then place it on a water-bath, and stir frequently until the acid is dissolved. When cold, make up the volume to 4 fluid ounces by the addition of glycerin.

185. *Glyceritum Gelatini (Glycerite of Gelatin. Glue Burn Mixture).*

℞ Gelatini Albi.....℥ 7½
Glycerini.....fl. ʒ 1
Acidi Carbolici.....fl. ʒ 2
Aquæ.....fl. ℥ 16

Soak the glue in the cold water until it is soft; then heat it on a water-bath until it is melted. Add the glycerin and continue heating until a firm, glossy skin begins to form on the surface of the mixture, in the intervals of stirring. Now add the carbolic acid and mix intimately.

Note.—This mixture may be kept ready prepared, and is best preserved in well-closed glass or porcelain jars. When it is wanted for use, it is heated on a water-bath until just melted, and applied with a soft, flat brush over the burned part, where it will form a strong, flexible skin.

186. *Glyceritum Sulphuris (Sulphur Paste).*

℞ Sulphuris Sublimati.....℥ 1
Ætheris Fortioris.....fl. ʒ 3
Glycerini.....fl. ʒ 1

Mix.

187. *Injectio Bismuthi Composita.*

℞ Zinci Sulphatis.....gr. 3
Bismuthi Subnitratis.....ʒ 1
Mucilaginis Acaciæ.....fl. ʒ 2
Aquæ.....q. s. ad fl. ℥ 1

Dissolve and mix.

188. *Injectio Hydrargyri Bichloridi.*

℞ Hydrargyri Bichloridi.....gr. ½
Aquæ.....fl. ℥ 4

Dissolve. (*Dr. S. Alexander.*)

189. *Injectio Quercus, Heaton (Heaton's Fluid).*

℞ Morphinæ Sulphatis.....gr. 1
Extr. Quercus Albæ Fl.....fl. ℥ 3½

Dissolve and mix. Used as an injection, in quantities of 5 or 10 minims, into the inguinal canal, after the reduction of hernia, the object being to cause sufficient inflammation to produce obliteration.

190. *Injectio Zinci et Belladonnæ.*

℞ Zinci Sulphatis.....gr. 10
Extr. Belladonnæ Fl.....♏ 15
Aquæ.....fl. ℥ 4

Dissolve and mix. (*Dr. H. Raphael.*)

191. *Injectio Zinci et Opii (Bowden's Injection).*

℞ Zinci Acetatis.....gr. 10
Vini Opii.....
Tinct. Catechu Comp.....āā fl. ʒ 2
Aquæ.....q. s. ad fl. ℥ 4

Dissolve and mix.

192. *Injectio Zinci Sulphocarbolatis.*

℞ Zinci Sulphocarbolatis.....gr. 12
Aquæ.....fl. ℥ 3

Dissolve. (*Dr. S. Alexander.*)

193. *Irrigatio Hydrastini.*

℞ Hydrastini Sulphatis (flavi)..ʒ 1
Acidi Borici.....ʒ 2
Tinct. Opii.....fl. ℥ 1
Olei Gaultheriæ.....♏ 20
Aquæ.....q. s. ad fl. ℥ 128

Dissolve and mix. For irrigating the urethra. (*Dr. J. W. S. Gouley.*)

Note.—Much confusion exists regarding the terms *hydrastin* and *hydrastine*. Until recently, the name *hydrastin* was applied, commercially and in eclectic practice, to a product obtained as a yellow precipitate by adding hydrochloric acid to a liquid extract of hydrastis, or by first precipitating the liquid extract with water and afterwards treating the precipitate with hydrochloric acid. It has been the custom of the eclectics to apply the name of the plant, changed so as to terminate in—*in*, to so-called "resinoids," or precipitates produced in the alcoholic liquid extracts by mixing them with water, with or without the intervention of acids. The yellow precipitate thus obtained from hydrastis is, in reality, a complex mixture, chiefly consisting of *hydrochlorate of berberine*, which latter alkaloid exists in *hydrastis*, along with other principles. Since other acids, besides hydrochloric, have also been used for producing this precipitate, the products are now usually distinguished as "*muriate of hydrastin*," "*sulphate of hydrastin*," etc., as the case may be, but all these are yellow and consist mainly of the respective salts of berberine. Hydrastis also contains a white alkaloid, the true *hydrastine* (latinized: *hydrastina*). Most of the recorded therapeutic experience has hitherto been based upon the yellow *alkaloid berberine*, misnamed *hydrastin* (latinized: *hydrastinum*.)

The salt which has so far been used in the above preparation, in the public institutions of this Department, is the commercial yellow "sulphate of hydrastin."

Besides the above, Lloyd's Colorless Hydrastis has also been used with great satisfaction.

194. *Linimentum Anodynum ("Jacob's Oil.")*

℞ Camphoræ,
Chloral.....āā ʒ 2
Chloroformi,
Ætheris Fortioris.....āā fl. ʒ 2
Tinct. Opii,
Olei Sassafras.....āā fl. ʒ 1
Linim. Saponis.....q. s. ad fl. ℥ 16

Dissolve and mix.

195. *Linimentum Opii Compositum (Canada Liniment).*

℞ Tinct. Opii.....fl. ℥ 1
Spir. Camphoræ,
Alcohol,
Olei Menthæ Pip.,
Aquæ Ammoniæ.....āā fl. ℥ ½
Olei Terebinthinæ.....fl. ʒ 4

Dissolve the oil of peppermint in the alcohol; add the spirit of camphor, then the oil of turpentine and tincture of opium, and lastly, the water of ammonia.

196. *Linimentum Stimulans.*

℞ Aquæ Ammoniæ,
Olei Terebinthinæ.....āā fl. ℥ 1
Linim. Camphoræ.....fl. ʒ 2

Add the camphor liniment to the water of ammonia in several portions, shaking after each addition. Lastly, add the oil of turpentine.

197. *Linimentum Terebinthinæ Acidum (Brodie's Liniment).*

℞ Acidi Sulphurici.....fl. ʒ 1
Olei Olivæ,
Olei Terebinthinæ.....āā fl. ℥ 1

Add the acid gradually to the olive oil, stirring in a mortar. When the mixture is cold, add the oil of turpentine, and mix.

198. *Liquor Boro-Salicylicus Compositus (Dobell's Solution).*

℞ Sodii Boratis,
Sodii Bicarbonatis.....āā ʒ 2
Glycerini.....♏ 200
Acidi Carbolici liquefacti...♏ 50
Aquæ calidæ.....fl. ℥ 16

Dissolve and mix.

Note.—Dr. Dobell's original formula directs the glycerite of carbolic acid of the *Brit. Pharm* The above given proportions produce practically the same result. In certain cases, Dr. Dobell recommends to replace the borax by chloride of ammonium, chlorate of potassium, or other salts.

199. *Liquor Boracis Salicylicus (Thiersch's Solution).*

℞ Acidi Salicylici.....part 1
Acidi Borici..... " 6
Aquæ..... " 500

Dissolve and filter.

Note—In filtering solutions containing salicylic acid or salicylates, *white* filtering paper, *free from iron*, must be used, to prevent the liquid from acquiring a red color.

200. *Liquor Bromi, Smith (Smith's Solution of Bromine).*

℞ Bromi.....(1 av. oz) gr. 437.5
Potassii Bromidi.....gr. 160
Aquæ.....fl. ℥ 4

Dissolve the bromide of potassium in the water, add the bromine, agitate, and transfer the mixture to small, glass-stoppered vials.

Used externally in gangrene. (*Dr. J. Lawrence Smith.*)

Note.—Bromine vapor is exceedingly irritating to the lungs, and very destructive to the metallic parts of balances. Hence, when great accuracy in weighing is not required, it is often more convenient to use at once an original bottle of bromine, such as is put up for the market. The original formula for the above solution directed one troy oz. of bromine, which would have to be weighed out. In place of this, it is recommended to use 1 avoirdupois ounce. Original bottles of bromine often have their stoppers so firmly fixed that they cannot be removed without risk. In such cases, it is best to proceed as follows:

Dissolve the bromide of potassium in 4 fl. oz. of water, and pour the solution into a deep wedgewood mortar. Take an original 1 oz. vial of bromine, clean its outside thoroughly, place it in the solution, and break the vial by a blow with the pestle. Then mix, and transfer to vials.

201. *Liquor Iodi Carbolisatus (Boulton's Solution).*

℞ Tinct. Iodi Comp.....♏ 110
Acidi Carbolici liquefacti..♏ 40
Glycerini.....fl. ℥ 2½
Aquæ.....q. s. ad fl. ℥ 16

Mix the tincture with the carbolic acid, liquefied by a gentle heat; then add the other ingredients, and expose the mixture to sun-light until it has become colorless.

Used as a local application in diphtheria.

202. *Liquor Iodi Causticus, Churchill (Churchill's Iodine Caustic).*

℞ Iodi..... ℥ 1
Potassii Iodidi..... ℥ 2
Aquæ.....fl. ℥ 4

Dissolve and mix.

Note.—This preparation should not be confounded with *Tinctura Iodi, Churchill* (Churchill's Tincture of Iodine), which will be found under No. 214.

203. *Liquor Morphinæ Boratus.*

℞ Morphinæ Sulphatis..... gr. 1
Acidi Borici.....gr. 10
Aquæ.....fl. ℥ ½

Dissolve.

Five drops to be put in the ear every 3 hours, in acute purulent otitis. (*Dr. W. F. Mittendorf.*)

204. *Liquor Picis Alcalinus (Alkaline Solution of Tar).*

℞ Picis Liquidæ..... ℥ 4
Potassæ..... ℥ 2
Aquæ.....q. s. ad fl. ℥ 10

Dissolve the potassa in ½ fluidounce of hot water; add the tar, and, when it is dissolved, enough water to make the volume, when cold, measure 10 fluidrachms. (*Dr. L. D. Bulkley.*)

205. *Lotio Flava (Yellow Wash).*

℞ Hydrarg. Chlor. Corrosivi., gr. 24
Aquæ Bullientis..... fl. ℥ ½
Liquoris Calcis...q. s. ad fl. ℥ 16

Dissolve the bichloride of mercury in the boiling water, and add the solution gradually to enough lime-water, under continued agitation, to make 16 fluidounces.

206. *Lotio Nigra (Black Wash).*

℞ Hydrarg. Chlor. Mitis. ....gr. 64
Liquoris Calcis.....fl. ℥ 16

Add the calomel to about 2 fluidounces of the lime-water, contained in the bottle in which the preparation is to be dispensed, and agitate thoroughly. Finally, add the remainder of the lime-water, and mix by agitation.

Note.—The sediment in this mixture is so heavy that it can only with difficulty be transferred from a mortar, together with the liquid, into the bottle. For this reason, it is preferable to prepare the mixture as directed above.

207. *Lotio Plumbi Composita (Goulard's Lotion,* modified).

℞ Liquor. Plumbi Subacet.,
Tinct. Opii..... āā fl. ℥ ½
Tinct. Arnicæ,
Spir. Camphoræ.....āā fl. ℥ 1
Aquæ..... fl. ℥ 8

Mix.

208. *Lotio Plumbi et Opii.*

℞ Plumbi Acetatis..... ʒ 2
Tinct. Opii.....fl. ʒ 4
Aquæ.....q. s. ad fl. ℥ 16

Dissolve and mix.

209. *Lotio Sulphuris Composita (Taylor's Lotion).*

℞ Sulphuris Sublimati..... ʒ 3
Spir. Camphoræ..... fl. ʒ 2
Sodii Boratis..... ʒ 1
Glycerini.....fl. ʒ 3
Aquæ.....fl. ℥ 6

Dissolve the borate of sodium in the water, add the spirit of camphor, and then incorporate the mixture with the sulphur previously triturated with the glycerin to a homogeneous paste.

210. *Mistura pro Ambustis, Buck (Buck's Burn Mixture).*

℞ Tragacanthæ pulv..... ℥ 2
Acaciæ pulv..... ℥ 4
Syrupi Fusci,
Aquæ Bullientis.....āā fl. ʒ 16

Mix the tragacanth and acacia with the molasses to a homogeneous paste, then add the boiling water under constant stirring.

211. *Oleum Ricini cum Atropina ("Atropine and Castor Oil").*

℞ Atropinæ..... gr. 2
Olei Ricini..... fl. ℥ 1

Triturate the atropine with a little of the castor oil to a smooth paste, then gradually incorporate the remainder of the castor oil, and continue the trituration until the atropine is dissolved.

One drop to be applied to the eye every half-hour. In burns of the eye by lime. (*Dr. W. F. Mittendorf.*)

Note.—The solution of the alkaloid in the oil may be hastened by a gentle heat. The alkaloid atropine and not the sulphate or any other salt, should be used for this preparation.

212. *Spiritus Ophthalmicus.*

℞ Olei Lavandulæ.....♏ 10
Olei Rosmarini.....♏ 30
Alcohol.....fl. ʒ 1

Mix. To be applied to the eyelids mornings and evenings. In asthenopic eye troubles. (*Dr. W. F. Mittendorf.*)

213. *Tinctura Acidi Borici.*

℞ Acidi Borici..... gr. 10
Alcohol..... fl. ℥ ½

Dissolve. 10 drops to be put in the ear mornings and evenings. In chronic, purulent otitis. (*Dr. W. F. Mittendorf.*)

214. *Tinctura Iodi, Churchill (Churchill's Tincture of Iodine).*

℞ Iodi..... ℥ 2½
Potassii Iodidi..... ℥ ½
Alcohol (U. S.)..... fl. 13
Aquæ..... fl. ʒ 3

Dissolve the iodide of potassium in the water, add the alcohol and iodine, and dissolve by agitation.

Note.—This preparation should not be confounded with Churchill's Iodine Caustic, which see under No. 202.

215. *Tinctura Iodi Composita (Compound Tincture of Iodine (U. S. Ph.,* 1870).

℞ Iodi..... gr. 240
Potassii Iodidi.....gr. 480
Alcohol.....fl. ℥ 16

Dissolve.

216. *Tinctura Iodi Decolorata (Decolorized Tincture of Iodine).*

℞ Iodi..... gr. 500
Aquæ Ammon. Fort.....fl. ʒ 3
Alcohol.....fl. ℥ 13

Mix the alcohol and stronger water of ammonia, add the iodine, and shake frequently until the latter is dissolved and the mixture has become colorless.

Note.—The product obtained by this or other processes no longer contains the iodine in a free state.

217. *Tinctura Saponis Viridis Composita.*

℞ Saponis Viridis..... ℥ 1
Olei Cadini.....fl. ʒ 1
Olei Lavandulæ.....♏ 90
Alcohol.....fl. ℥ 1

Mix. (*Dr. Tilbury Fox.*)

[To be continued.]

Medicated Pencils.

Dr. Unna, of Hamburg, has introduced a new form of applying a variety of remedies in form of thin sticks or pencils, in the same manner as nitrate of silver is applied. Dieterich gives a list of these preparations in the *Pharm. Centralhalle.* The distinguishing title or name chosen for this form of medication is Stilus dilubilis ("Pasten-Stift").

The mass, from which these pencils are made, is prepared from starch, dextrin, sugar, and tragacanth. These are carefully mixed to a uniform powder, enough water added to make a plastic mass, and this mass is rolled out to strings of ¼ inch in thickness, or made by pressing the mass through suitable orifices in a press (Knowlson's suppository apparatus which we illustrated in New Remedies, 1879, p. 171, would answer well for this purpose). These strings or pencils are dried upon parchment paper at the ordinary temperature, and then wrapped in tin-foil. At one end of the pencil, the label is affixed.

1. *Stilus Acidi Salicylici Dilubilis* 10% ("10% Salicylic Pencil").

Salicylic Acid.....10 parts
Tragacanth, pd..... 5 "
Starch, pd.....30 "
Dextrin ....35 "
Sugar, pd..... 20 "
Water..... ..suff. quant.

Yields 40–45 pencils.

2. *Stilus Acidi Salicylici Dilubilis* 40% ("40% Salicylic Pencil").

Salicylic Acid.....40 parts
Tragacanth, pd..... 5 "
Starch, pd..... ....10 "
Dextrin .....25 "
Sugar, pd..... ....20 "
Water .....suff. quant.

Yields 45–48 pencils.

3. *Stilus Arsenico-Sublimati Dilubilis* 10 *et* 5% ("10% Arsenic and 5% Sublimate Pencils").

Arsenious Acid, pd.....10 parts
Corrosive Sublimate, pd.....5 "
Tragacanth, pd..... 5 "
Starch, pd.....30 "
Dextrin... .....30 "
Sugar, pd.....20 "
Water .....suff. quant.

Yields 39–41 pencils.

4. *Stilus Cocainæ Dilubilis* 5% ("5% Cocaine Pencil").

Cocaine Hydrochlorate, pd.....5 parts
Tragacanth, pd..... 5 "
Starch, pd.....35 "
Dextrin.....35 "
Sugar, pd..... 20 "
Water.....suff. quant.

Yields 48–50 pencils.

5. *Stilus Ichthyoli Dilubilis* 20% ("20% Ichthyol Pencil").

Sodium Sulpho-ichthyolate	20 parts
Tragacanth, pd.	5 "
Starch, pd.	30 "
Dextrin	35 "
Sugar, pd	10 "
Water	suff. quant.

Yields 39–40 pencils.

6. *Stilus Iodoformi Dilubilis* 40% ("40% Iodoform Pencil").

Iodoform	40 parts
Tragacanth, pd.	5 "
Starch, pd.	10 "
Dextrin	30 "
Sugar, pd	15 "
Water	suff. quant.

Yields 32–33 pencils.

7. *Stilus Pyrogalloli Dilubilis* 40% ("40% Pyrogallic Acid Pencil").

Pyrogallic Acid	40 parts
Tragacanth, pd.	5 "
Starch, pd	13 "
Ether Ext. Annatto	2 "
Dextrin	20 "
Sugar, pd	20 "
Water	suff. quant.

Yields 40–41 pencils.

[The ethereal extract of annatto directed in the formula is specified to be that prepared by Gehe & Co. The object of this addition is not stated.]

8. *Stilus Resorcini Dilubilis* 40% "40% Resorcin Pencil").

Resorcin, pure	40 parts
Tragacanth, pd.	5 "
Starch, pd	10 "
Dextrin	25 "
Sugar, pd	20 "
Water	suff. quant.

Yields 39–40 pencils.

9. *Stilus Saponis Kalini Dilubilis* 60% ("60% Potash-Soap Pencil").

Anhydrous Potash Soap	60 parts
White Bole, pd.	40 "

Knead them together. This yields 32–34 pencils.

Note.—Anhydrous potash-soap is obtained by heating soft-soap (potash-soap) in a steam bath under constant stirring with a broad wooden spatula, until it no longer loses weight.

10. *Stilus Sublimati Dilubilis* 10% ("10% Sublimate Pencil").

Corrosive Sublimate, pd.	10 parts
Tragacanth, pd.	5 "
Starch, pd.	25 "
Dextrin	40 "
Sugar, pd.	20 "
Water	suff. quant.

Yields 44–45 pencils.

11. *Stilus Zinci Oxidi Dilubilis* 20% ("20% Oxide of Zinc Pencil").

Zinc oxide	20 parts
Tragacanth, pd.	5 "
Starch, pd.	30 "
Dextrin	25 "
Sugar, pd	30 "
Water	suff. quant.

Yields 32–34 pencils.

12. *Stilus Zinci Sulpho-carbolatis Dilubilis* 20% ("20% Sulpho-carbolate of Zinc Pencil").

Zinc Sulpho-carbolate, pd	10 parts
Tragacanth, pd.	5 "
Starch, pd	25 "
Dextrin	30 "
Sugar, pd.	20 "
Water	suff. quant.

Yields 35–36 pencils.—After *Pharm. Centralh.*

Ink for Rubber Stamps.—EUGENE DIETERICH recommends the following composition for

Blue:	*Parts*
Water soluble Aniline-Blue	3
Distilled Water	10
Pyroligneous Acid (Wood-vinegar)	10
Alcohol	10
Glycerin	70

Mix by trituration in a mortar.

Other colors are made in the same manner, only substituting the following quantities of coloring matters for the 3 parts of blue in the above formula:

Violet: 3 parts methyl-violet.
Bluish-red: 2 parts fuchsine.
Brick-red: 3 parts eosin.
Bluish-green: 4 parts water-soluble green.
Brown: 4 parts water-soluble Bismarck brown.
Black: 4 parts nigrosin.

All aniline colors, whether used as ink for writing or for rubber stamps, should be faintly acidulated. This is here accomplished by means of the wood-vinegar.—*Pharm. Centralh.*

Peptone Suppositories.—Suppositories containing peptone have recently been recommended for the purpose of introducing nourishment by the rectum. The peptone to be employed for this purpose is the dry form now obtainable in the market. This corresponds to about 10 times its weight of meat. The following formula is recommended:

Peptone, dry, and free from common salt	24 grs.
Cacao Butter	a suff. quant.

to make 1 suppository.

Dose for children, 1 suppository 4 times daily; for adults, double the quantity.—*Rundschau* (Prag).

Syrup of Tamarinds is recommended by Mr. Rozsnyay as a good corrigent for the bitter taste of preparations of *Rhamnus Purshiana* ("Cascara sagrada").—*Pharm. Journ.*

Pilula Aloini (or Sir Andrew Clark's Aperient Pill), recently recommended by Sir Andrew Clark in a paper in the *Lancet*, for relief of simple constipation when mechanical efforts fail to bring on motion.

℞ Aloini,	
Ext. Nucis Vom.,	
Ferri Sulph.,	
Myrrhæ, pulv.,	
Saponis	āā gr. ½

M. *One* pill.

A pill may be taken half an hour before the last meal of the day, or just so much of one as will suffice to move the bowels in a natural way the next day after breakfast.

Sir Andrew Clark remarks that if the fæces are dry and hard, and if there is no special weakness of the heart, half a grain of ipecac may be added to each pill. Should the action of the pill be preceded by griping, and the character of the action be unequal, half a grain of fresh extract of belladonna will probably remove these disadvantages. ["Fresh extract of belladonna" evidently means the extract prepared from the fresh leaves, "Extractum Belladonnæ of the British Pharmacopœia.—ED. AM. DR.] If the aloin pill gripes, provokes the discharge of much mucus, or otherwise disagrees, substitute the fluid extract of cascara sagrada (Rhamnus Purshiana), and take from 5 to 20 drops in an ounce of water either on retiring to bed or before dinner. And when neither aloin nor cascara agree, you may succeed by taking before the midday meal 2 or 3 grains each of dried carbonate of sodium and powdered rhubarb.

BIBLIOGRAPHY.

DIE WICHTIGSTEN HEILMITTEL IN IHRER WECHSELNDEN CHEMISCHEN ZUSAMMENSETZUNG UND PHARMAKO-DYNAMISCHEN WIRKUNG. Uebersichtlich dargestellt von Dr. P. C. PLUGGE, Prof. an der Reichsuniversität in Groningen. Mit Bewillig. d. Verf. aus dem Holländischen übersetzt von Eduard Schär, Prof. der Pharmacie am Eidg. Polytechnicum in Zürich. 8vo., Jena, 1886.

THIS is a compendious treatise on the most important remedies which are liable to variations in strength and in kind of effect from various causes. The subject is treated both from a pharmaceutico-chemical, and from a medical standpoint, and contains much that is of great importance to the physician to know, but which is to a great extent neglected or overlooked by him.

At the end is placed a comparative table of the strength of different medicinal substances and preparations in the more important modern pharmacopœias. A translation and abstract of one of the chapters of this work will be found elsewhere in this number.

A MANUAL OF THE DISEASES OF THE SKIN, by BALMANNO SQUIRE, M.B., Lond., etc. Fourth smaller edition. London: J. & A. Churchill, 1887, pp. 194, 8vo.

As a concise introduction to the systematic study of skin diseases, this manual has already proven itself to be acceptable.

OUTLINE OF A PLAN OF STUDY FOR ASSISTANTS IN PHARMACY. By A. B. PRESCOTT, Ph.D. A paper read before the Michigan State Pharmaceutical Association, Oct. 12th, 1886, pp. 16, 12mo.

EL COLERA EN VALENCIA EN 1885: Memoria acerca de los Trabajos realizados durante la Epidemia presentada por la Alcaldia al Exc'mo Ayuntamiente en nombre de la Junta Municipal de Sanidad. Valencia: 1886, pp. 180 fol., with numerous tables and maps.

THIS memoir gives an account of the cholera epidemic in Valencia, Spain, in 1885, amounting to 7,084 cases, the subject being considered under the headings: Medical Studies, Sanitary measures, Administration, and Statistics.

SEVENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH, LUNACY, AND CHARITY OF MASSACHUSETTS. Supplement containing the Report and Papers on Public Health, with a General Index. Boston: 1886, pp. 357, 8vo.

THE reports of the Massachussetts Board of Health have always been of exceptional value and interest, and the present volume is no exception. The special reports on malaria in eastern Massachusetts, disposal of sewage at the Massachusetts Reformatory, lead poisoning, and relative to the adulteration of food and drugs, are especially noteworthy. This volume also contains a general index to the contents of the public health supplements of all the reports published by the State Board of Health, Lunacy, and Charity.

TWENTY-SECOND ANNUAL REPORT OF THE ALUMNI ASSOCIATION, with the Exercises of the Sixty-fifth Annual Commencement of the Philadelphia College of Pharmacy, for the Years 1885–86. Philadelphia, Pa., 1886, pp. 204, 8vo, $0.25.

BESIDES several interesting papers read at social meetings of the Association, this pamphlet contains a great deal to interest the numerous alumni of the College.